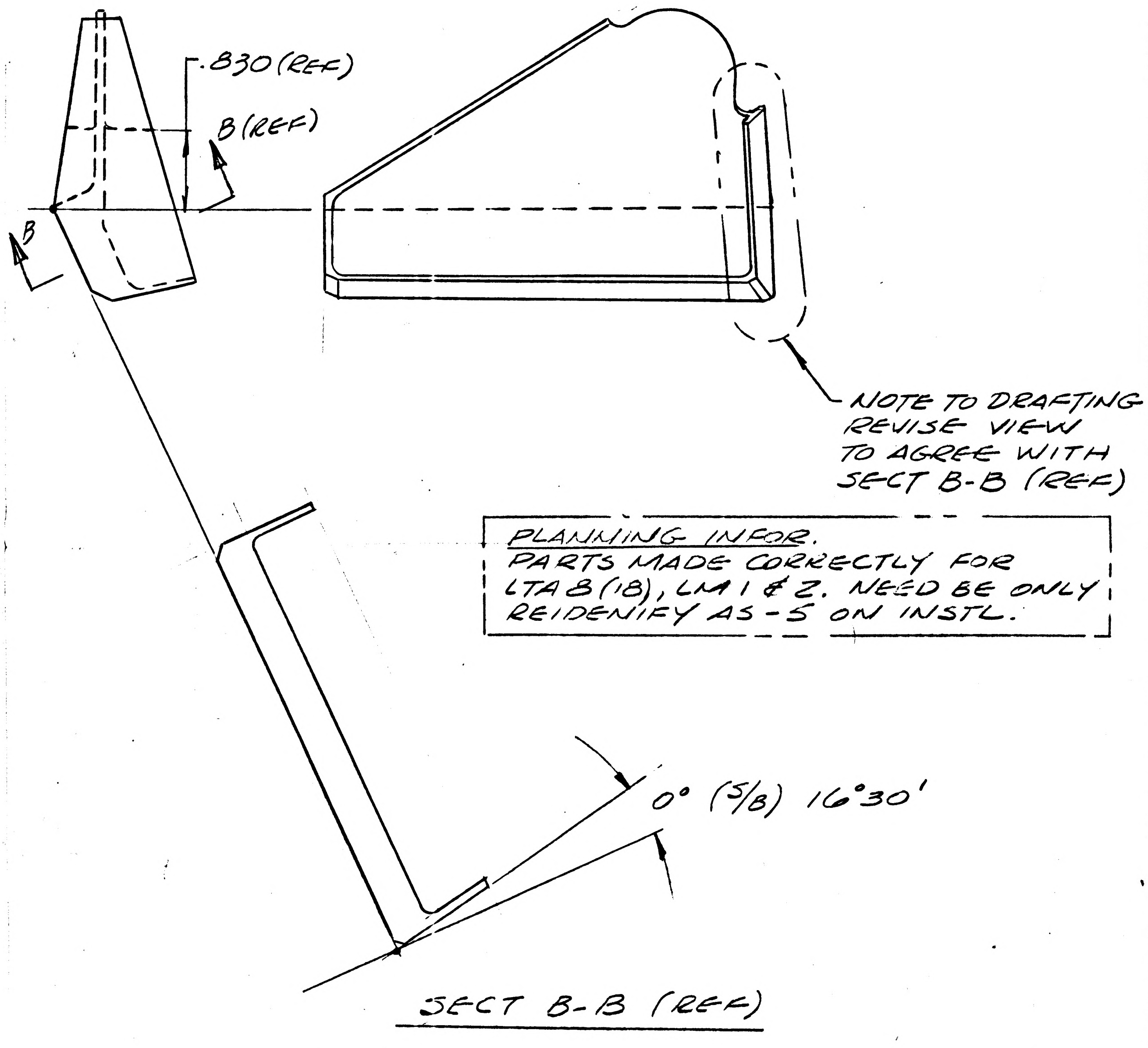
A *

NG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512 EMF-A
ENGINEERING ORDER

DWG. NO. LDW280M11160
EO NO. B1
CONTROL INFO NO. LM-5-12091

IN FLD, B/M, & MOD/BLK
CREATE -5 SAME AS & TO REPLACE -3 EXCEPT AS SHOWN SCRAP -3
1 & T = E



PLANNING INFOR.
PARTS MADE CORRECTLY FOR
LTA8(18), LM 1 & 2. NEED BE ONLY
REIDENIFY AS -5 ON INSTL.

SECT B-B (REF)

RELEASED BY LIAISON

REF CONT # LM-5-12092

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	
REASON FOR EO	REVISE FITTING TO NEST CORRECTLY ON INSTL	DESCRIPTION OF EO	IN FLD, B/M, & MOD/BLK ADDED -5, REMOVED -3

GAEC EO RELEASE: C 5 E

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM1(31) THRU	
		LM15(45), LTA8(18)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			-3

			SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY						DV			
DATE	/	1/11/67 VDI			1/10	1/5/67	1-5-67	1-6-67	1/5/67

PRIORITY: C
DRAWING TITLE: FITTING-A/S-M/S ENG COMPT LHS X223.5, +Z4.56, -Y17.25
DRAWING NO.: LDW280M11160
EO NO.: B1

ISSUED BY LIAISON MDREYES X6452 SECTION VDI/P.HENTON GROUP NO. 335 PI 35

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM107	LDW280-28884	LM-5(35)	3
LM	LDW280-28884	LM-15(45)	3
LM		THRU	
LM	LDW280-28884	LM-3(33)	3
LFM107	LDW280-28884	LM-4(34)	3
LM	LDW280-54279	LM-15(45)	2
↑		THRU	↑
↓	LDW280-54279	LM-4(34)	
LM	LDW280-53279	LM-3(33)	
LFM140	LDW280-54279	LM-5(35)	
LFM140	LDW280-54279	LM-4(34)	
LM	LDW280-28279	LM-2(32)	
LM	LDW280-28279	LM-1(31)	↓
LM	LDW280-28279	LTA-8(18)	2
LFM107	LDW280-28884	LM-3(33)	3
PART NO. LDW280-10743-19			
LFM140	LDW280-54279	LM-5(35)	1
LFM140	LDW280-54279	LM-4(34)	1
LM	LDW280-54279	LM-15(45)	1
↑		THRU	1
	LDW280-54279	LM-4(34)	1
	LDW280-53279	LM-3(33)	1
			1
			1
	LDW280-28279	LM-2(32)	1
↓	LDW280-28279	LM-1(31)	1
LM	LDW280-28279	LTA-8(18)	1
PART NO. LDW280-10743-13		GAEC SCH NO. 30	

LDW280-10743 F

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28243	LM-15(45)	4
↑	↑	THRU	↑
	↓	LM-1(31)	↓
	LDW280-28243	LTA-8(18)	4
	LDW280-53882	LM-15(45)	28
	↕	THRU	↕
	LDW280-53882	LM-3(33)	28
	LDW280-54186	LM-15(45)	3
		THRU	↕
	LDW280-54186	LM-4(34)	3
	LDW280-53186	LM-3(33)	3
	LDW280-28178	LM-2(32)	11
↓	LDW280-28178	LM-1(31)	11
LM	LDW280-28178	LTA-8(18)	11
PART NO. LDW280-10743-11 (CONT'D ON SH. 1.02)		GAEC SCH NO. 30	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM140	LDW280-54186	LM-5(35)	3
LM	LDW280-28096	LM-2(32)	2
LM	LDW280-28096	LM-1(31)	2
LM	LDW280-28096	LTA-8(18)	2
LFM140	LDW280-54186	LM-4(34)	3
LM	LDW280-51174	LM-2(32)	2
LM	LDW280-51174	LM-1(31)	2
LM	LDW280-28887	LTA-8(18)	7
↑	LTM280-26888	PA-1(47)	28
	LDW280-14344	STRUCTURAL TEST	4
	LDW280-14344	LM-15(45)	394
	LDW280-14344	LM-14(44)	394
	LDW280-14344	LM-13(43)	394
	LDW280-14344	LM-12(42)	394
	LDW280-14344	LM-11(41)	394
	LDW280-14344	LM-10(40)	394
	LDW280-14344	LM-9(39)	394
	LDW280-14344	LM-8(38)	394
	LDW280-14344	LM-7(37)	394
	LDW280-14344	LM-6(36)	394
	LDW280-14344	LM-5(35)	394
	LDW280-14344	LM-4(34)	394
	LDW280-14344	LM-3(33)	390
	LDW280-14344	LM-2(32)	569
↓	LDW280-14344	LM-1(31)	569
LM	LDW280-14344	LTA-8(18)	[illegible]
PART NO. LDW280-10743-11		GAEC SCH NO. 30	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.01	1.02	1.10	1.11	1.12	2.00	3.00	
REV	F	F	F	A	D	E	F	F	
SHEET	1.03	1.13	1.14						
REV	F	F	F						
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO F	
LAST DASH NO. USED	-45	PRIM NO.	K(001)
		207	MP-16F-6/24/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM #1

DOCUMENTATION TYPE II

DRAWN BY	SALVADOR	WEIGHTS	D.ROBESCH 4/8
LAYOUT BY	SALVADOR		
CHECKED BY			
GROUPLDR	J.PUSATERI 4/4		
VEH DES INT	W.R.BISCHOFF 4/4		
STRUCTURES	FEB AP 4/3	PROJ ENGR	J. ALBER 4/28
STRUCTURES	HILDERMAN 4/5	REL GROUP	A.CARAMANICA 5/2
THERMO	A. KATZ 4/28/68		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

WASHER
ASCENT STAGE CABIN~FF LOWER
THERMAL SHIELD

SIZE	CODE IDENT NO.		
B	26512	LDW280-10743	F

Ⓕ

SCALE NONE

SHEET 1.00 OF 11

ENG 77 1 12-65

REV "F" CDR 6-12-68

01

NAS 9-1100

LDW280-10743 F

CONT'D

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53929	PA-1(47)	70
↑	LDW280-53929	LM-3(33)	92
	LDW280-53928	LM-3(33)	144
	LDW280-53462	LM-3(33)	8
	LDW280-53453	LM-3(33)	4
	LDW280-53928	PA-1(47)	62
↓	LDW280-51173	LM-2(32)	33
LM	LDW280-51173	LM-1(31)	33
LFM50	LDW280-53929	PA-1(47)	70
LM	LDW280-28882	LTA-8(18)	34
↑	LTM280-26883	PA-1(47)	8
	LDW280-14344	LM-15(45)	22
	LDW280-14344	LM-14(44)	22
	LDW280-14344	LM-13(43)	22
	LDW280-14344	LM-12(42)	22
	LDW280-14344	LM-11(41)	22
	LDW280-14344	LM-10(40)	22
	LDW280-14344	LM-9(39)	22
	LDW280-14344	LM-8(38)	22
	LDW280-14344	LM-7(37)	22
	LDW280-14344	LM-6(36)	22
	LDW280-14344	LM-5(35)	22
	LDW280-14344	LM-4(34)	22
	LDW280-14344	LM-3(33)	22
	LDW280-14344	LM-2(32)	22
↓	LDW280-14344	LM-1(31)	22
LM	LDW280-14344	LTA-8(18)	18
PART NO. LDW280-10743-23		GAEC SCH NO. 30	

PART NO. LDW280-10743-23 (CONT'D)

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53882	LM-15(45)	12
LM	↕	THRU	↕
LM	LDW280-53882	LM-3(33)	12
LFM50	LDW280-53928	PA-1(47)	62
LM	LDW280-54453	LM-15(45)	4
↑	↕	THRU	↑
	LDW280-54453	LM-4(34)	
	LDW280-51453	LM-2(32)	
↓	LDW280-51453	LM-1(31)	↓
LM	LDW280-28453	LTA-8-(18)	4

MODEL OR END ITEM	NEXT ASSY	MODULF OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-14344	LM-15(45)	44
↑	LDW280-14344	LM-14(44)	44
	LDW280-14344	LM-13(43)	44
	LDW280-14344	LM-12(42)	44
	LDW280-14344	LM-11(41)	44
	LDW280-14344	LM-10(40)	44
	LDW280-14344	LM-9(39)	44
	LDW280-14344	LM-8(38)	44
	LDW280-14344	LM-7(37)	44
	LDW280-14344	LM-6(36)	44
	LDW280-14344	LM-5(35)	44
	LDW280-14344	LM-4(34)	44
	LDW280-14344	LM-3(33)	44
↓	LDW280-14344	LM-2(32)	44
LM	LDW280-14344	LM-1(31)	44
PART NO. LDW280-10743-25 (CONT.)		GAEC SCH NO. 30	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-14344	LM-15(45)	98
↑	LDW280-14344	LM-14(44)	98
	LDW280-14344	LM-13(43)	98
	LDW280-14344	LM-12(42)	98
	LDW280-14344	LM-11(41)	98
	LDW280-14344	LM-10(40)	98
	LDW280-14344	LM-9(39)	98
	LDW280-14344	LM-8(38)	98
	LDW280-14344	LM-7(37)	98
	LDW280-14344	LM-6(36)	98
	LDW280-14344	LM-5(35)	98
	LDW280-14344	LM-4(34)	98
	LDW280-14344	LM-3(33)	99
↓	LDW280-14344	LM-2(32)	99
LM	LDW280-14344	LM-1(31)	99
PART NO. LDW280-10743-21		GAEC SCH NO. 30	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET									
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED

GRUMMAN REL INFO

PRIM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO.

DRAWN BY

LAYOUT BY

CHECKED BY

PROJ ENGR

REL GROUP

LINE ITEM

DOCUMENTATION TYPE

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SIZE B

CODE IDENT NO. 26512

LDW280-10743 F ⓕ

SCALE NONE

SHEET 1.01 OF

ENG 77 1 12-65

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LFM95	LTM280-26884	PA-1(47)	3
LFM95	LTM280-26881	PA-1(47)	2
LFM95	LTM280-26880	PA-1(47)	5
LM	LTM280-26881	PA-1(47)	2
LM	LTM280-26880	PA-1(47)	5
LM	LTM280-26884	PA-1(47)	3
LFM-126	LDW280-28174	LTA-8(18)	2
LFM-126	LDW280-28096	LTA-8(18)	4
LM	LDW280-53851	LM-15(45)	3
		THRU	
	LDW280-53851	LM-3(33)	3
	LDW280-53161	LM-15(45)	2
		THRU	
	LDW280-53161	LM-3(33)	2
	LDW280-53160	LM-15(45)	5
		THRU	
LM	LDW280-53160	LM-3(33)	5
LDW280-10743-11 (CONT'D FROM SH.1.00)			
LFM140	LDW280-54241	LM-5(35)	8
LM	LDW280-51160	LM-2(32)	23
	LDW280-51851	LM-2(32)	33
	LDW280-51851	LM-1(31)	33
	LDW280-51161	LM-2(32)	29
	LDW280-51161	LM-1(31)	29
LM	LDW280-51160	LM-1(31)	23

PART NO. LDW280-10743-17 (CONT'D)

LDW280-10743 F

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LFM140	LDW280-54186	LM-5(35)	14
LM	LDW280-53875	LM-15(45)	8
LM	LDW280-53875	LM-3(33) THRU	8
LFM140	LDW280-54279	LM-5(35)	5
LM	LDW280-54279	LM-15(45)	5
LM	LDW280-54279	LM-4(34) THRU	5
LM	LDW280-53279	LM-3(33)	5
LFM140	LDW280-54279	LM-4(34)	5
LM	LDW280-54241	LM-15(45)	8
LM	LDW280-54241	LM-4(34) THRU	8
LM	LDW280-53241	LM-3(33)	7
LFM140	LDW280-54241	LM-4(34)	8
LM	LDW280-54174	LM-15(45)	11
LM	LDW280-54174	LM-4(34) THRU	11
LM	LDW280-51174	LM-3(33)	12

PART NO. LDW280-10743-17 (CONT'D)

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54186	LM-15(45)	14
	LDW280-54186	LM-4(34) THRU	14
	LDW280-53186	LM-3(33)	14
	LDW280-28243	LM-15(45)	10
LM	LDW280-28243	LM-1(31) THRU	10
LFM140	LDW280-54186	LM-4(34)	14
LM	LDW280-28243	LTA-8(18)	10
	LDW280-28178	LM-2(32)	21
	LDW280-28178	LM-1(31)	21
LM	LDW280-28178	LTA-8(18)	21
LFM140	LDW280-54174	LM-5(35)	11
LM	LDW280-28096	LM-2(32)	3
LM	LDW280-28096	LM-1(31)	3
LM	LDW280-28096	LTA-8-(18)	5
LFM140	LDW280-54174	LM-4(34)	11
LM	LDW280-51174	LM-2(32)	12
	LDW280-51174	LM-1(31)	12
	LDW280-28875	LM-2(32)	8
	LDW280-28875	LM-1(31)	8
	LDW280-28875	LTA-8(18)	8
	LDW280-28241	LM-2(32)	7
	LDW280-28241	LM-1(31)	7
	LDW280-28241	LTA-8(18)	7
	LDW280-28279	LM-2(32)	5
	LDW280-28279	LM-1(31)	5
	LDW280-28279	LTA-8(18)	5
LM	LDW280-28174	LTA-8(18)	12

PART NO. LDW280-10743-17

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH
SHEET
REV
SHEET
REV
SHEET
REV
LAST SECT LTR USED
LAST DASH NO. USED
GRUMMAN REL INFO
PRIM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO.
DRAWN BY
LAYOUT BY
CHECKED BY
PROJ ENGR
REL GROUP

LINE ITEM
DOCUMENTATION TYPE
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-10743 F
SCALE NONE
SHEET 1.02 OF

ENG 77.1 12-65

01

NAS 9-1100

LFM-126	LDW280-28851	LTA-8(18)	50
LFM-126	LDW280-28161	LTA-8(18)	10
LFM-126	LDW280-28160	LTA-8(18)	14
PART NO. (CONT'D.) LDW280-10743-25			
LFM-126	LDW280-28279	LTA-8(18	5
LFM-126	LDW280-28875	LTA-8(18)	8
↑	LDW280-28852	↑	6
	LDW280-28243		10
↓	'DW280-28241	↓	7
LFM-126	LDW280-28174	LTA-8(18)	14
PART NO. LDW280-10743-17 (CONT'D)			
LFM-126	LDW280-28279	LTA-8(18)	2
PART NO. LDW280-10743-19 (CONT'D)			
LFM-126	LDW280-28176	LTA-8(18)	2
LM	LDW280-51851	LM-2(32)	31
LM	LDW280-51851	LM-1(31)	31
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10743-45			

LDW280-10743 F

LFM126	LDW280-28176	LTA-8(18	2
LFM140	LDW280-54186	LM-5(35)	9
LFM140	LDW280-54186	LM-4(34)	9
LM	LDW280-54186	LM-15(45)	9
↑		THRU	
	LDW280-54186	LM-4(34)	9
	LDW280-53186	LM-3(33	9
	LDW280-54176	LM-15(45)	13
	↕	THRU	↕
	LDW280-54176	LM-4(34)	13
	LDW280-28178	LM-2(32)	11
	LDW280-28178	LM-1(31)	11
	LDW280-28176	LM-3(33)	13
	LDW280-28176	LM-2(32)	13
↓	LDW280-51852	LM-2(32)	6
LM	LDW280-51852	LM-1(31)	6
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAFC SCH NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10743-43			

LFM-126	LDW280-28882	LTA-8(18)	4
PART NO. LDW280-10743-23 (CONT'D)			
LM	LDW280-54279	LM-15(45)	1
		THRU	
LM	LDW280-54279	LM-6(36)	1
LDW280-10743-15-1			
LFM140	LDW280-54279	LM-5(35)	1
LFM140	LDW280-54279	LM-4(34)	1
LM	LDW280-54279	LM-5(35)	1
↑	LDW280-54279	LM-4(34)	1
	LDW280-53279	LM-3(33)	1
	LDW280-28279	LM-2(32)	1
↓	LDW280-28279	LM-1(31)	1
LM	LDW230-28279	LTA-8(18)	1
LDW280-10743-15			
LFM-126	LDW280-28176	LTA-8(18)	2
LM	LDW280-28096	LM-2(32)	3
LM	LDW280-28096	LM-1(31)	3
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10743-41			

~~SH REV~~ STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET									
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED

GRUMMAN REL INFO

PRIM NO.

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO.
DRAWN BY
LAYOUT BY
CHECKED BY
PROJ ENGR
REL GROUP

LINE ITEM
DOCUMENTATION TYPE

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10743	F
SCALE	NONE	SHEET 1.03 OF	

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
E	5	1.03 & 1.13					✓	EO E5	IN M/B -43, ADDED N/A LDW280-28176, LM-2(32), LM-3(33), 13 REQD. ADDED SH 1.13	LM-2 & LM-3	NOT	REQD	I. SCOTT 12-1-67		
	6	1.00, 3.00 2.00				✓		EO E6 LCD 1847	REMOVED -47, ADDED N/A LDW280-51851 (5) FOR -17	LM-1(31)		-47			
	7	1.12, 1.13 3.00				✓		EO E7 LCD 1847	ON-17: ADDED N/A LDW280-51160(23) REQD/MOD (LM-1 & LM-2) ADDED LM-2 EFF TO N/A LDW280-51161 & REVISED QTY REQD FOR LM-1 & LM-2(29) WAS (18)	LM-1 & LM-2	NOT	REQD			
	8	1.01 & 1.13		O	✓			EO E8	IN M/B FOR-23 REMOVED N/A LDW280-53173 EFF LM-3 THRU LM-15	LM-3 THRU LM-15		-23			
	9	1.02, 1.03 & 1.13		O		✓		EO E9 LCD 1847	IN M/B ADDED LM 2 EFF TO -17 N/A LDW280-51161 (29) & LDW280-51851(33) AND TO -45 N/A LDW280-51851(31)	LM-2	NOT	REQD			
	10	1.03 & 1.13		R		✓		EO E10 LCD 1249, & CCA 455	IN M/B FOR -43 ADDED N/A LDW280-54176	LM-4 THRU LM-15	NOT	REQD H.D.	CZ		
F	1	1.01, 1.00 1.13		0		✓		EOF1 LCD2360	ON-23, ADDED N/A LDW280-53462, (8) REQD LDW280-53928 (144) REQD. ON-25, ADDED N/A LDW280-53928 (72) REQD	LM-3			R. DOTTIN 4-16-68		
	2	1.01 1.02 1.13		0		✓		EOF2 LCD2360	ON-23, ADD N/A LDW280-53929 (92) REQD/VEH. LM-3 (33) ON-25 REMOVE N/A REQUIREMENT LDW280-53928 (72) REQD/VEH LM-3 (33) IN MOD. BLK FOR -11 ADD THE FOLLOWING: LM N/A LDW280-53160 LM-3 (33) THRU LM-15 (45) 5 REQD. MOD. LM N/A LDW280-53161 LM-3 (33) THRU LM-15 (45) 2 REQD/MOD. LM N/A LDW280-53851 LM-3 (33) THRU LM-15 (45) 3 REQD/MOD.	LM-3 THRU LM-15	NOT	REQD			
	3	1.01 1.13		LFM 50		✓		LEO280-879 LCD2019 CCA667	ON-23 ADDED PA-1 (47) REQUIREMENTS	PA-1 (47)					
	4	1.03 1.13 2.00 3.00					✓	EOF4	ON MOD. BLOCK, B/M, FLD. CREATED -15-1 EFF. LM-6(36) THRU LM-15(45) RESTRICTED -15 TO LTA-8(18), LM-1(31) THRU LM-5 (35) WAS LTA-8(18) LM-1(31) THRU LM-15 (45)	LM-6 THRU LM-15	✓				
	5	1.02, 1.13		LFM95		✓		EOF5 LCD2501	IN MOD. BLK. FOR -11 ADDED N/A LTM280-26884 PA-1 (47), 3 REQD	PA-1 (47)	NOT	REQD			

CHANGE APPROVAL

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	THERMO	WEIGHTS					
F											

FOR CONTINUATION OF REVISIONS SEE SHEET 1.14

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10743	F
SCALE NONE			SHEET 1.13

ENG 77.3 5-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~[illegible]~~ APPD
F	6	1.00, 1.02, 1.03, 1.14		LFM140		✓		LE0280-901 LCR2360	FOR -13, -15, -15-1, -17 & -19 REVISED N/A, N/A WAS LDW280-53279 FOR LM-4 (34) AND SUB. (ADDED SH. 1.14)	LM-4 THRU LM-15	NOT	REQD	R. DOTTIN 4-16-68		
	7	1.00, 1.14		LFM107		✓		EOF7 LCD2567	FOR -19 M/B ADDED LM-3 (33) THRU LM-15 (45) EFF N/A LDW280-28884 3 REQD/MODULE	LM-3 THRU LM-15					
	8	1.02, 1.14		LFM140		✓		LE0280-915 LCD2360	FOR -17, FOR LM-4 THRU LM-15 N/A LDW280-54174 WAS LDW280-51174	LM-4 THRU LM-15					
	9	1.02 1.14		LFM140		✓		LE0280-917 LCD2360	FOR -17, FOR LM-4 THRU LM-15 N/A LDW280-54241 WAS LDW280-53241						
	10	1.00, 1.02 1.03, 1.14		LFM140		✓		LE0280-919 LCD2360	IN MODEL BLOCK: REVISED NEXT ASSEMBLY LDW280-54186 WAS LDW280-53186 FOR -11, -17 & -43						
	11	1.14, 2.00		D.E.C3-LM-34					REMOVE NOTE 3 C/O FROM PROCESS SYM BLOCK FOR -21, -23 & -25. ADD #76	NOT REQD	NOT	REQD			
	12	1.02 1.13		LFM95		✓		LCD2501	REF EOF5: IN DESCRIPTION OF EO ADD IN M/B FOR -11 ADDED N/A LTM280-26880 PA-1 (47) 5 REQD & N/A LTM280-26881 PA-1 (47) 2 REQD.	PA-1 (47)	NOT	REQD	ES		
	13	1.00 1.03 1.14		LFM-126		✓		LCD-1021-33 CCA998 OK PKG 2 SHC	ON-11, -17, -19, -23, -25, -43 & -45 ADDED END ITEM LFM126 REQ	LTA-8 (18)	NOT	REQD	SCHWETER 4-23-68		

CHG APPROVED LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	THERMO	WEIGHTS	THERMO
F	6/14/68	6/14/68	6/17/68	FEB			6-17-68

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10743	F
SCALE NONE			SHEET 1.14

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10743-15-1	E	DOUBLER	AL ALLOY SH	QQ-A-250/4	2024-T3	.063 X 2 X 6	NONE	88	
		-45	↕	WASHER	AL ALLOY SH	QQ-A-250/4	2024-T3	.032 X 2 X 2	NONE	88	
		-43	↕	SPACER	AL ALLOY SH	QQ-A-250/4	2024-T3	.063 X 1 X 2	NONE	76	
		-41	↕	SPACER	AL ALLOY SH	QQ-A-250/4	2024-T3	.063 X 2 X 2	NONE	76	
		-25	↕	WASHER	SEE NOTE 1			.020 × 2 × 2	NOTES 1 & 2	76	
		-23	↕	WASHER	SEE NOTE 1			.020 × 2 × 2	NOTES 1 & 2	76	
		-21	↕	WASHER	SEE NOTE 1			.020 × 2 × 2	NOTES 1 & 2	76	
		-19	↕	SPACER	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 × 1 × 2	NONE	88	
		-17	↕	WASHER	↕	↕	↕	.063 × 1 × 1	↕	↕	
		-15	↕	DOUBLER	↕	↕	↕	.063 × 2 × 6	↕	↕	
		-13	↕	DOUBLER	AL ALLOY SH	QQ-A-250/4	2024-T3	.063 × 2 × 4	NONE	88	
		LDW280-10743-11	E	WASHER	SEE NOTE 1			.020 × 4 × 4	NOTE 1, 2 & 3		

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP 14-9030
						CM	CHEM-MILL	LSP 14-26100
						76	ALODINE	LSP 14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

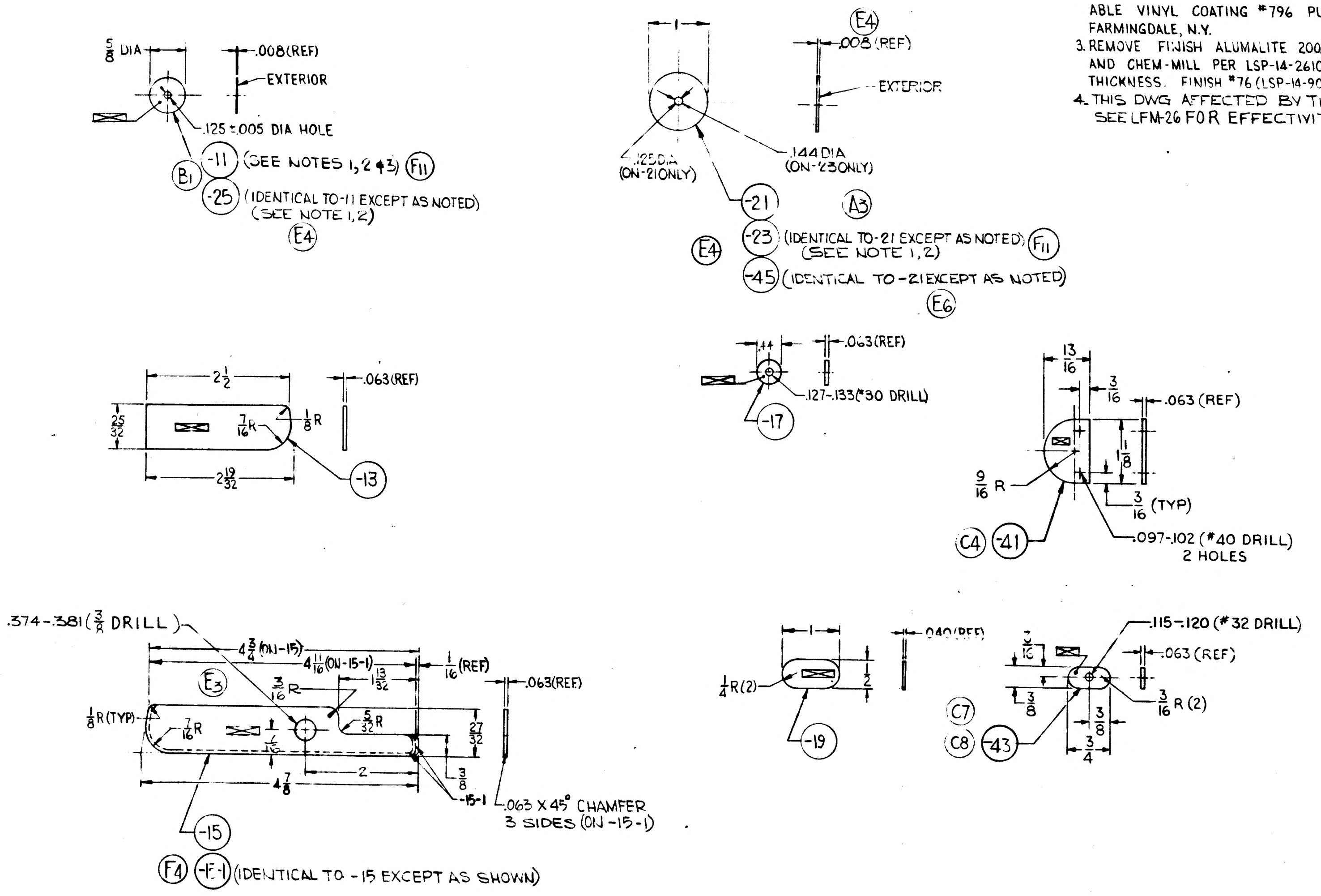
SIZE B | CODE IDENT NO. 26512 | LDW280-10743 | F

SCALE NONE | SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


5/8 DIA
.008(REF)
EXTERIOR
.125 ±.005 DIA HOLE
B1
-11 (SEE NOTES 1,2 & 3) F11
-25 (IDENTICAL TO-11 EXCEPT AS NOTED) (SEE NOTE 1,2)
E4
1
E4
.008 (REF)
EXTERIOR
.125 DIA (ON-21 ONLY)
.144 DIA (ON-23 ONLY)
-21
A3
E4
-23 (IDENTICAL TO-21 EXCEPT AS NOTED) (SEE NOTE 1,2) F11
-45 (IDENTICAL TO-21 EXCEPT AS NOTED)
E6
2 1/2
.063(REF)
25/32
7/16 R
1/8 R
2 19/32
-13
.44
.063(REF)
.127-.133(#30 DRILL)
-17
13/16
3/16
.063 (REF)
1 1/8
9/16 R
3/16 (TYP)
C4
-41
.097-.102 (#40 DRILL) 2 HOLES
.374-.381(3/8 DRILL)
4 3/4 (ON-15)
4 11/16 (ON-15-1)
1/16 (REF)
.063(REF)
E3
3/16 R
1 13/32
1/8 R(TYP)
7/16 R
1/16
5/32 R
27/32
3/8
2
4 7/8
-15-1
.063 X 45° CHAMFER 3 SIDES (ON -15-1)
-15
F4
-15-1 (IDENTICAL TO -15 EXCEPT AS SHOWN)
1
.040(REF)
1/4 R(2)
2
-19
.115-.120 (#32 DRILL)
3/16
.063 (REF)
3/8
3/16 R (2)
C7
C8
-43
3/8
3/4

NOTES:

1. MAKE -11, -21, -23 & -25 FROM AL ALLOY SH ALCLAD 2024-T3 (SKIN QUALITY) QQ-A-250/5. SURFACE DESIGNATED EXTERIOR TO BE PREFINISHED WITH ALUMALITE 200/R1/EB10 WHICH MAY BE PURCHASED FROM ALUMINUM CO. OF AMERICA (CODE IDENT 01634)
2. THE SURFACE DESIGNATED EXTERIOR SHALL BE PROTECTED WITH STRIPABLE VINYL COATING #796 PURCHASED FROM CARROLL PRODUCTS INC., FARMINGDALE, N.Y.
3. REMOVE FINISH ALUMALITE 200/R1/EB10 (ANODIZE) FROM INTERIOR SURFACE AND CHEM-MILL PER LSP-14-26100 FROM .020 TO $.008^{+.003}_{-.000}$ TOTAL THICKNESS. FINISH #76 (LSP-14-9010) ON CHEM-MILLED SURFACE.
4. THIS DWG AFFECTED BY THE FOLLOWING LFMS. SEE LFM-26 FOR EFFECTIVITY AND MODIFICATIONS.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

LDW280-10743F

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

LM	SIZE D	CODE IDENT NO. 26512	LDW280-10743	F
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW280-10743
EO NO. J5
CONTROL INFO NO. LDW280B7344

IN M/B FOR -17 REMOVE N/A LDW280-54174, 11 REQD, EFF LM-6(36) THRU LM-15(45).
IN M/B FOR -43 ADD N/A LDW280-54174, 42 REQD, EFF LM-6(36) THRU LM-15(45).

SWIP

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 3179 PKG. 3 ECP# A062P CCA# 1278

REASON FOR EO
TO MAKE DETAIL PART REQMTS AGREE WITH N/A REQMTS

DESCRIPTION OF EO
SEE ABOVE

EO RELEASE 3/20
3/24/9

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-7(37)	
		THRU	
LM		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK SCRAP -17

	VDI	~~SUPPORT~~ THERMAL	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY		mmR						
DATE	3/13/69	3/14/69		3/13/69	3/14/69		3/20/69	3-24-69

PRIORITY C

DRAWING TITLE SHIELD INSTL - AIS - CABIN IMU BEAM RADAR - THERMAL

DRAWING NO. LDW280-10743

EO NO. J5

3-19-69
ISSUED BY W HOPTON X86048 3-12-69 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
				LEM	LDW280-23168	LEM-6(36)	3	LEM	LDW280-23168	LEM-6(36)	1 EA
						LEM-5(35)	3			LEM-5 (35)	1 EA
				↕	↕	LEM-4(34)	3	↕	↕	LEM-4(34)	1 EA
						LEM-3(33)	3			LEM-3 (33)	1 EA
				LEM	LDW280-23168	LTA-3(13)	3	LEM	LDW280-23168	LTA-3(13)	1 EA
PART NO.		GAEC SCH NO.		PART NO. LDW280-10744-11		GAEC SCH NO.		PART NO. LDW280-10744-13-15 & -17		GAEC SCH NO. 312	

(3)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -17

GRUMMAN REL^C INFO

PRIM NO. 215 VE(001) PP12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	ED.M.KAERS 1-3-65	~~RELIABILITY~~	
LAYOUT BY	G.T.HALL 1-11-6		
CHECKED BY	1.10.66		
GROUP LDR	J. PUSATERI 1/11/66		
VEH DES INT	W. BISCHOFF		
STURCTURES	BW 1-12	PROJ ENGR	1/18
STURCTURES	HILDERMAN 1/13	REL GROUP	Lippincott 1/20
WEIGHTS	A Roberts 1/17	RELEASE	

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HAT
ASCENT STAGE-DOCKING HATCH

SIZE B
CODE IDENT NO. 26512
LDW280-10744
SCALE NONE
SHEET 1.00 OF 3

ENG 77.1 9-64

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10744-17	E	HAT	AL ALLOY SH	QQ-A-283	7075	.032×3 3/8×5 1/8	T6	88	
								15	↑	↑	↑	↑	↑	.032×3 3/8×4 1/4	↑	↑	
								13	↓	↓	↓	↓	↓	.032×3 3/4×8 3/4	↓	↓	
								LDW280-10744-11	E	HAT	AL ALLOY SH	QQ-A-283	7075	.032×3 3/4×8 1/8	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-10744
SCALE NONE
SHEET 2.00

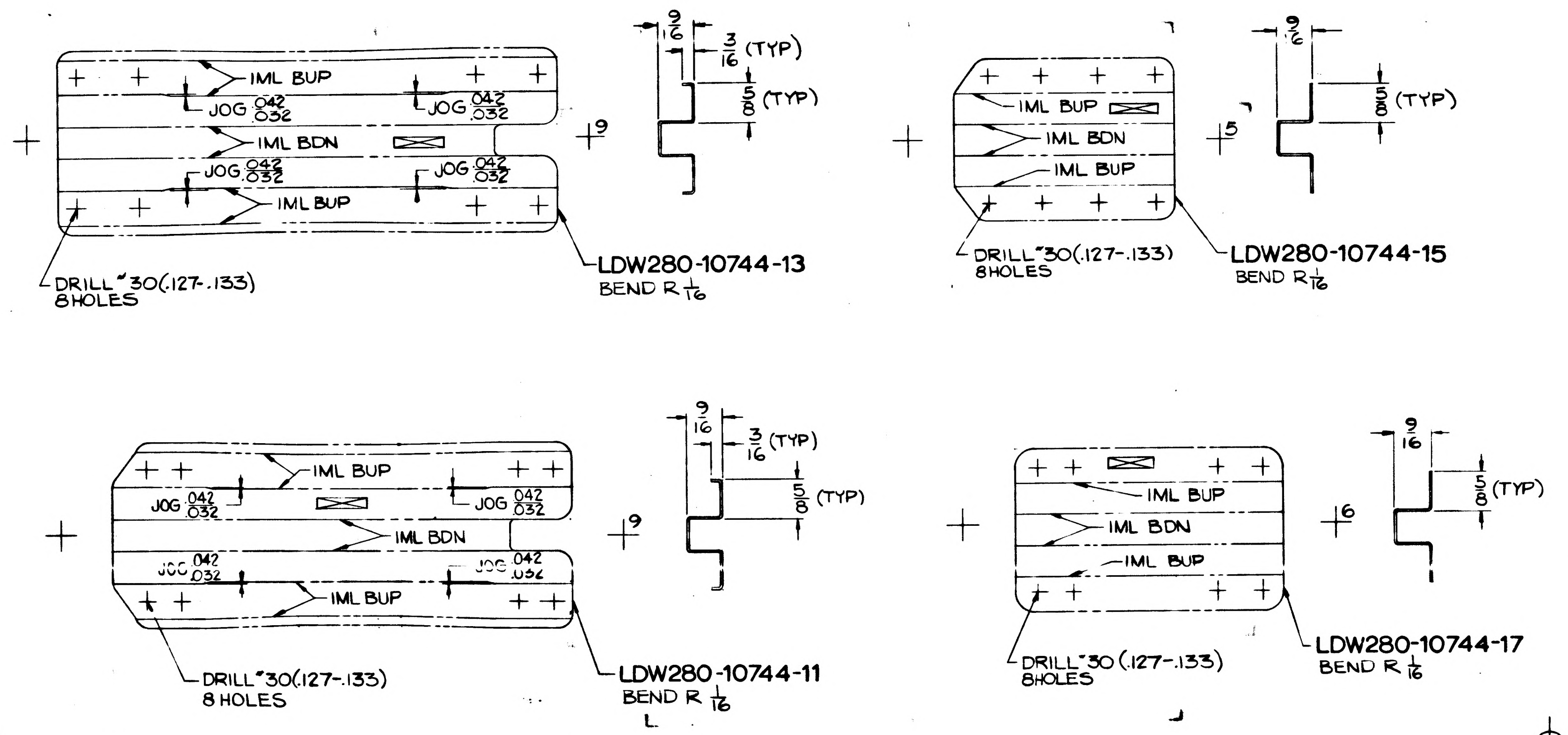
ENG 77.2 7-65

01

NAS 9-1100

LDW280-10744

NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS.



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE ME AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM: LEM	SIZE: D	CODE IDENT NO.: 26512	LDW280-10744
	SCALE: FULL		SHEET 3.00

FOR PHOTO REPRODUCTION

LDW280-10744

01 NAS 9-1100

22

ENG 20.2 ... 3-65

GRUMMAN AIRCRAFT ENGINEERING CO.
CODE IDENT NO. 26512
ENGINEERING ORDER

NO. LE0280 | EO NO. 294
CONTROL INFO NO. LDW280 A0656

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS* THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM 10(40), LEM-11(41), LEM-12(42), LEM 13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4 34

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280- 10719	A1	SEE DRAWING
- 10720	A1	↑
- 10723	B1	
- 10724	A1	
- 10726	B1	
- 10727	A1	
- 10739	A1	
- 10740	A1	
- 10744	A1	
- 10745	A1	
- 10750	A1	
- 10751	C2	
H 10752	A1	
- 10753	A1	
- 10755	B2	
- 10757	B2	
- 10760	B1	
- 10765	B4	
- 10766	B1	
- 10767	C1	
- 10768	A1	
- 10770	A1	
- 10771	A1	
- 10783	B1	↓
- 10784	A1	
LDW280- 10788	B1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC C EO RELEASE: FR 10/17/6

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM-9(39)
LEM		LEM-10(40) LEM-11(41)	LEM-12(42)
LEM		LEM-13(43) LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD: ✓ REVISE DWG ☐ RECORD EO
DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

	APPROVED BY	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
	WP			=	GW			AC
DATE	9/23/66			=	9-29		10-17-66	10-3-66

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LE0280
EO NO.: 294

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION Vehicle Design Int. GROUP NO. 220 PI. 35 EMA

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO.	LDW280-10744	EO NO.	A2
CONTROL INFO NO.	LDW280-B-1729		

REMOVE LM-5(35) THRU LM-15(45) EFF. FROM -11, -13, -15 & -17
& N/A LDW280-23168

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	✓ LCD 2550 · PKG. #3 · CCA 813 · ⑤

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
REMOVAL OF STEPS (3) FROM UPPER HATCH	REMOVED LM-5(35) THRU LM-15(45) EFF. FROM -11, -13, -15 & -17 & N/A LDW280-23168	3/4/68

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-5(35)	
		THRU	
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			-11, -13 -15, -17

	G	V.D.I	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY									
DATE		2/17/68			2/16/67	2-28		3/7/68	3/4/68

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	~~A/S-~~ HAT DOCKING HATCH	LDW280-10744	A2

3-15-68
ISSUED BY A. PROKOPETZ SECTION V.D.I GROUP NO. 335 PL 25

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1.	1.00,1.10						LE0280-294	FOR-11 &-13 ADDED LEM-7 THRU LEM-15 EFF. ADDED SHEET#1.10	LM-7(37) THRU LM-15(45)	NOT	REQ'D.	E.COX 7-3-68		
	2.	1.00,1.10				✓		LE0280-604 LCD1224 CCA548	ON-11 &-13. ADDED LTA-8 & DVT REQMTS.	LTA-8(18) DVT (70)	NOT	REQ'D			
	3.	1.00,1.10				✓		LE0280-674 CCA547 LCD1367	FOR-11 & 13. ADDED ZERO "G" EFF.	ZERO "G" TEST	NOT	REQ'D.			
	4.	1.00,1.10				✓		LE0280-682, LCD1224, CCA548	"CANCELS NOTED CHANGE ON LE0280-604" (REF A2)	LTA-8(18) D.V.T. (70)		-11,-13			
	5	1.00,1.10		G Ⓡ		✓		EOA5 LCD2550 CCA 813	REMOVED LM-5(35) THRU LM-15(45) EFF. FROM -11 &-13 8. N/A LDW 280-23069 a murphy 12-9-68	LM-5 THRU LM-15(45)		-11,-13	12-1068		

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10745	A
SCALE NONE			SHEET 1.10

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23069	LEM-6(36)	2
		LEM-5(35)	2
		LEM-4(34)	2
		LEM-3(33)	2
LEM	LDW280-23069	LTA-3(13)	2

PART NO. LDW280-10745-13

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23069	LEM-6(36)	8
		LEM-5(35)	8
		LEM-4(34)	8
		LEM-3(33)	8
LEM	LDW280-23069	LTA-3(13)	8

PART NO. LDW280-10745-11

GAEC SCH NO. 31.2

(3)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -13

GRUMMAN REL INFO

PRIM NO.	215		
LE(001)	PP12		

ENG 77.1 9-64

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES

± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY	E. KAERS 1-6-65	RELIABILITY	——
LAYOUT BY	G.T. HALL JR. 1-10-66		
CHECKED BY	Ⓜ 1-8-66.		
GROUP LDR	J. PUSATERI 1/10/66		
VEH DES INT	FOR W. BISCHOFF 1-10-66		
STRUCTURES	BW 1-11	PROJ ENGR	1/14
STRUCTURES	HILDERMAN 1/11	REL GROUP	
WEIGHTS	1-13	RELEASE	1/1/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SHIM
ASCENT STAGE - DOCKING HATCH

SIZE B

CODE IDENT NO. 26512

LDW280-10745

SCALE NONE

SHEET 1.00 OF 3

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10745-13	E	SHIM	AL ALLOY SH	QQ-A-283	7075	$.062 \times 1\frac{3}{4} \times \frac{3}{4}$	T6	88	
								LDW280-10745-11	E	SHIM	AL ALLOY SH	QQ-A-283	7075	$.062 \times 1\frac{1}{2} \times \frac{3}{4}$	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10745

SCALE NONE

SHEET 2.00

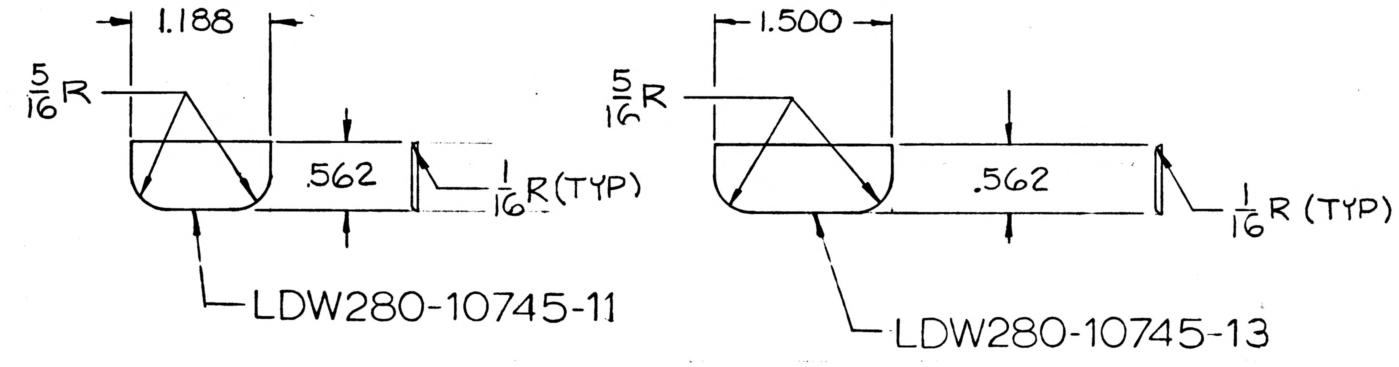
ENG 77.2 7-65

01

NAS 9-1100

MANUFACTURING OPERATION
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY	✓


1.188
5/16 R
.562
1/16 R (TYP)
LDW280-10745-11
1.500
5/16 R
.562
1/16 R (TYP)
LDW280-10745-13

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10745	
SCALE FULL		SHEET 3	

ENG 73.1 6-64

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM	LDW280-23055	LEM-6(36)	1
										LEM-5(35)	1
										LEM-4(34)	1
										LEM-3(33)	1
								LEM	LDW280-23055	LTA-3(13)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW280-10750-11		GAEC SCH NO. 31-3	

(3)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	A	GRUMMAN REL INFO	
LAST DASH NO. USED	-11	PRIM NO. 215	VE(001) PP.12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS — DECIMALS — ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

ENG 77.1 9-64

CONTRACT NO. NAS 9-1100
LINE ITEM
DOCUMENTATION TYPE II

DRAWN BY	W.SHIPMAN 12-14-65	~~RELIABILITY~~	
LAYOUT BY	S.BRASWELL 12-13-65		
CHECKED BY	F 12-20-65		
GP LEADER	J.A.P. 12-21		
VEH DES INT	12/22		
STRUCTURES	FEB GW 12-22		
STRUCTURES	[illegible] 12/22	PROJ ENGR	12/30
WEIGHTS	[illegible] 12-27	RELEASE	[illegible] 12/30

GRUMMAN AIRCRAFT ENGRG CORP.
BETHPAGE, L. I., NEW YORK

DOUBLER
ASCENT STAGE-CABIN-¢ LOWER +Z 27.000

SIZE B
CODE IDENT NO. 26512
LDW280-10750
SCALE NONE
SHEET 1 OF 3

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10750-11	E	DOUBLER	AL ALLOY SH	QQ-A-283	7075-T6	.050 × 1 7/8 × 3 3/8	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
			88	ANODIZE	LSP14-9030			

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10750

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

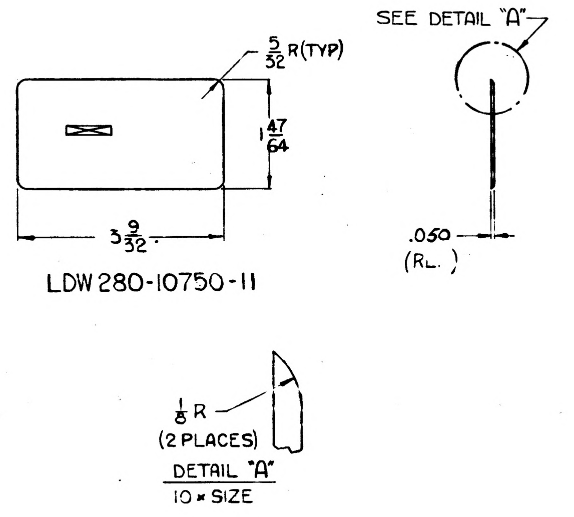
01

NAS 9-1100

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBERSTAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒	✓


$\frac{5}{32}$ R (TYP)
$1\frac{47}{64}$
$3\frac{9}{32}$
LDW 280-10750-11
SEE DETAIL "A"
.050
(R.L.)
$\frac{1}{8}$ R
(2 PLACES)
DETAIL "A"
10 × SIZE

01

NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
	SIZE	CODE IDENT NO.		
LEM	C	26512	LDW 280-10750	
MODEL OR END ITEM	SCALE FULL & NOTED		SHEET 3.00	

LDW280-10750

22

ENG 33.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CO
CODE IDENT NO. 26512
ENGINEERING ORDER

NO. LEO230 | EO NO. 294
CONTROL INFO NO. LDW280 A0656

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS* THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM 10(40), LEM-11(41), LEM-12(42), LEM 13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4 34

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10719	A1	SEE DRAWING
-10720	A1	
-10723	B1	
-10724	A1	
-10726	B1	
-10727	A1	
-10739	A1	
-10740	A1	
-10744	A1	
-10745	A1	
-10750	A1	
-10751	C2	
H 10752	A1	
-10753	A1	
-10755	B2	
-10757	B2	
-10760	B1	
-10765	B4	
-10766	B1	
-10767	C1	
-10768	A1	
-10770	A1	
-10771	A1	
-10783	B1	
-10784	A1	
LDW280-10788	B1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE: FR 10/17/6

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM	8(38) LEM 9(39)
LEM		LEM-10(40) LEM-1	1(41) LEM 12(42)
LEM		LEM 13(43) LEM-	14(44) LEM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D

APPROVED BY: WP | DATE: 9/23/66 | V.D.I.

SUPPORT | RELIAB. GROUP | GROUP LEADER: — — | STRESS GROUP: 9-19 | LIAISON ENGRG | PROJ ENGRG: 10-17-66 | GOVT: AC 10-3-66

PRIORITY: C | DRAWING TITLE: NOTED | DRAWING NO: LEO.280 | EO NO. 294

ISSUED BY L. DE TURRIS 7-18-66 X 1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 35 EMA

01 NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23026	LEM-6(36)	2 EA
LEM	LDW280-23026	LEM-5(35)	2 EA
LEM	LDW280-23026	LEM-4(34)	2 EA
LEM	LDW280-23026	LEM-3(33)	2 EA
LEM	LDW280-23026	LTA-3 (13)	2 EA

PART NO. LDW280-10751-15, -21 & -23

GAEC SCH NO. 32-5

(3)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -23

GRUMMAN REL INFO B

PRIM NO. 215 | LE(001) | MP12 | A

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM I

DOCUMENTATION TYPE II

DRAWN BY	R.NISBET 12-29-65
LAYOUT BY	R.BRACCO RB 1-20
CHECKED BY	J.S. 1-12-66
GR LEADER	1/20/66
VEH DES INT	1/21/66
STRUCTURES	2/1
STRUCTURES	2/2/66
WEIGHTS	22
PROJ ENGR	2/2
REL GROUP	Botti 2-5-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

FRAME
ASCENT STAGE, MID SECTION R.C.S.
FUEL TANK SUPPORT

SIZE B | CODE IDENT NO. 26512 | LDW280-10751 | B

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 9-64

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23026	LM-3(33)	2

PART NO. LDW280-10751-1 — GAEC SCH NO. 32

PART NO. LDW280-10751-27

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54026	LM-15(45)	2
		LM-14(44)	2
		LM-13(43)	2
		LM-12(42)	2
		LM-11(41)	2
		LM-10(40)	2
		LM-9(39)	2
		LM-8(38)	2
		LM-7(37)	2
		LM-6(36)	2
		LM-5(35)	2
LM	LDW280-54026	LM-4(34)	2

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23026	LTA-3(13)	2

PART NO. LDW280-10751-15 — GAEC SCH NO. 32

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54026	LM-15(45)	2 EA
		LM-14(44)	2 EA
		LM-13(43)	2 EA
		LM-12(42)	2 EA
		LM-11(41)	2 EA
		LM-10(40)	2 EA
		LM-9(39)	2 EA
		LM-8(38)	2 EA
		LM-7(37)	2 EA
		L M-6(36)	2 EA
		L M-5(35)	2 EA
	LDW280-54026	L M-4(34)	2 EA
	LDW280-23026	L M-3(33)	2 EA
LM	LDW280-23026	LTA-3 (13)	2 EA

PART NO. LDW280-10751-21 & -23 — GAEC SCH NO. 32

(3)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	1.11	2.00	3.00
REV	C	C	C	C	C
SHEET					
REV					
SHEET					
REV					

LAST SECT LTR USED

LAST DASH NO. USED -27

GRUMMAN REL INFO 9

PRIM NO. 215 — JK 001 — MP-14C 4/11/7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 — LINE ITEM I — DOCUMENTATION TYPE II

DRAWN BY	R. NISBET 12-29-65
LAYOUT BY	R. BRACCO
CHECKED BY	J.S. 1-12-66
GR LEADER	[illegible]
VEH DES INT	[illegible]
STRUCTURES	JJ Fed 2/1
STRUCTURES	Hidermann 2/4/66
WEIGHTS	[illegible] 22
PROJ ENGR	[illegible] 2/2
REL GROUP	Botti 2-5-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

FRAME
ASCENT STAGE, MID SECTION R.C.S.
FUEL TANK SUPPORT

SIZE B — CODE IDENT NO. 26512 — LDW280-10751 — C

SCALE NONE — SHEET 1.00 OF 5

ENG 77.1 9-64

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00, 2.00 3	A4 A9				✓		REMOVED -11 & -13 AND ADDED -17 & -19 ADDED SH 1.10; SH 1 OF 4 WAS SH 1 OF 3, ADDED TOOLING HOLES IN -17 & -19, REVISED NOTE #1 TO AGREE	NOTED		-11 -13	E. Kaers 3-26-66		4-1-66
B	1	1.00, 1.10, 3.00					✓	EO B1	ON SHT 3, ZONE 2B, REVISED TRIM OF -17	LTA-3, LEM-3, -4, -5, -6	✓		T. FREDA 6-8-66		
	2	1.00, 1.10, 2.00, 3.00						EO B2	DELETED -19; CREATED -23	LTA-3, LEM-3, -4, -5, -6		-19			
	3	1.00, 1.10, 2.00, 3.00						EO B3	DELETED -17; CREATED -21	LTA-3, LEM-3, -4, -5, -6		-17			
C	1	1.10 3.00	3B					EO C1	IN FIELD FOR -21 ADDED CM SYMBOL $\boxed{1}$, REMOVED CM LINE	NOT REQD	NOT	REQD	HERB. SCHWETER 3-22-67		
	2	1.10 1.00						LEO280-294	FOR -15, -21 & -23 ADDED LM-7 THRU LM-15 EFF.	LM-7 THRU LM-15	NOT	REQD			
	3	1.00 1.10	6B					EO C3	IN FIELD B/M & MOD/BLK ADDED -1 ASSY. IN MOD/BLK FOR -15, DELETED LM-3 (33) THRU LM-15 (45) EFFECTIVITY.	LM-3 THRU LM-15		-15			
	4	1.00 1.10 2.00 & 3.00	3B					EO C4	ON SHTS. 1.00, 2.00 & 3.00 ADDED -21. ON SHT 1.00 EFF. OF -15 WAS LTA-3 (15), LM-3 (33) THRU LM-15 (45)	LM-4 THRU LM-15		-15			
	5	1.00 1.10 2.00 & 3.00	3B					EO C5	REF-EO #C4 LDW280-10751-27 WAS LDW280-10751-21 IN MOD/BLK FOR -25 DELETED LM-4 THRU LM-15 EFF. REMOVED -15 RESTRICT.	LM-3 THRU LM-15 LTA-3		-25			
	6	1.00 & 1.10						LEO280-442	FOR -21, -23 & -27 NEXT ASSY LDW280-54026 WAS LDW280-23026	LM-4 THRU LM-15	✓				
	7	1.00 1.10						LEO280-443	ON INCORP. OF EO #C5 RESTRICT EFF OF -1 TO LM-3 N/A LDW280-23026, 2/MOD. WAS RESTRICT EFF OF -25 TO LM-3 N/A LDW280-23026	LM-3	NOT	REQD			
	8	1.10 3.00	6C					EO C8	REF EO #C3 ON -1 NAS697C08 (2) WAS NAS697C08K (2)	LM-3 THRU LM-15	✓		J.G.		

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10751	C
SCALE NONE		SHEET 1.10	

FOR CONTINUATION OF REVISIONS SEE SHEET 1-11

ENG 77.3 5-65

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
C	9	1.00 1.11							REF EO C8 ON-1 EFF LM-3 WAS LM-3 THRU LM-15 ADDED SH 1.11	LM-3	NOT	REQD	SCHWIETER 3-22-67		

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10751	C
SCALE NONE		SHEET 1.11	

ENG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY -1	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
2	NAS697C08	E		PLATE NUT	STD PART						
AR	MS20426AD3			RIVET	STD PART						
	LDW280-10751-27			PLATE	AL ALY SH	QQ-A-250/12	7075-T6	.032×2¾×3¾	NONE	88	4B
1	-25			PLATE			7075-T6	.032×2¾×4¼	NONE		6B
	-23			FRAME			7075	.063×13½×43⅜	T6,CM		9A
	-21			FRAME			7075	.056×13⅝×43¼	T6,CM		4A
	LDW280-10751-15			PLATE	AL ALY SH	QQ-A-250/12	7075-T6	.032×2¾×3¾	NONE	88	5B
	LDW280-10751-1	E		PLATE ASSY					NONE	NONE	6B

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC
						CM	CHEM-MILL	LSP14-26100
						T6	HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10751	C

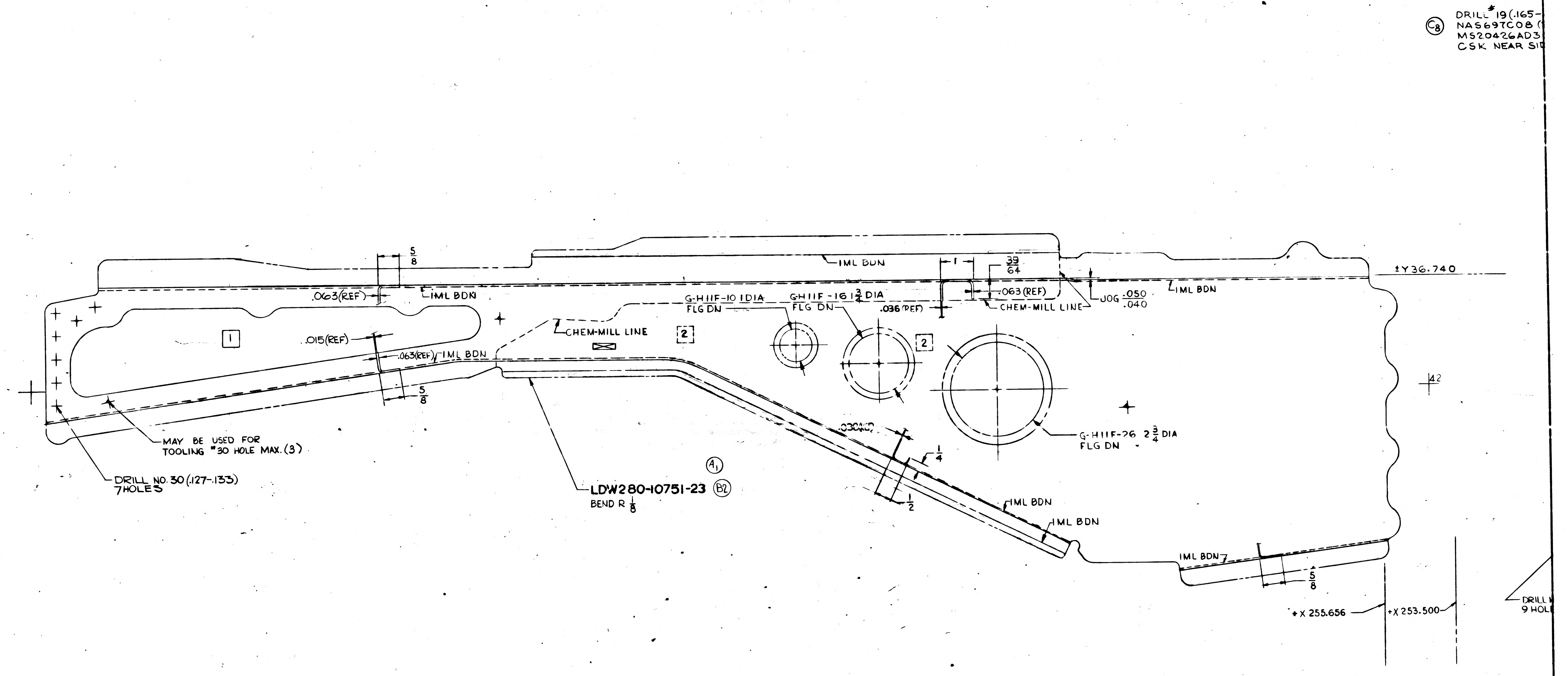
SCALE NONE

SHEET 2.00

ENG 77.2 5-64

01

NAS 9-1100

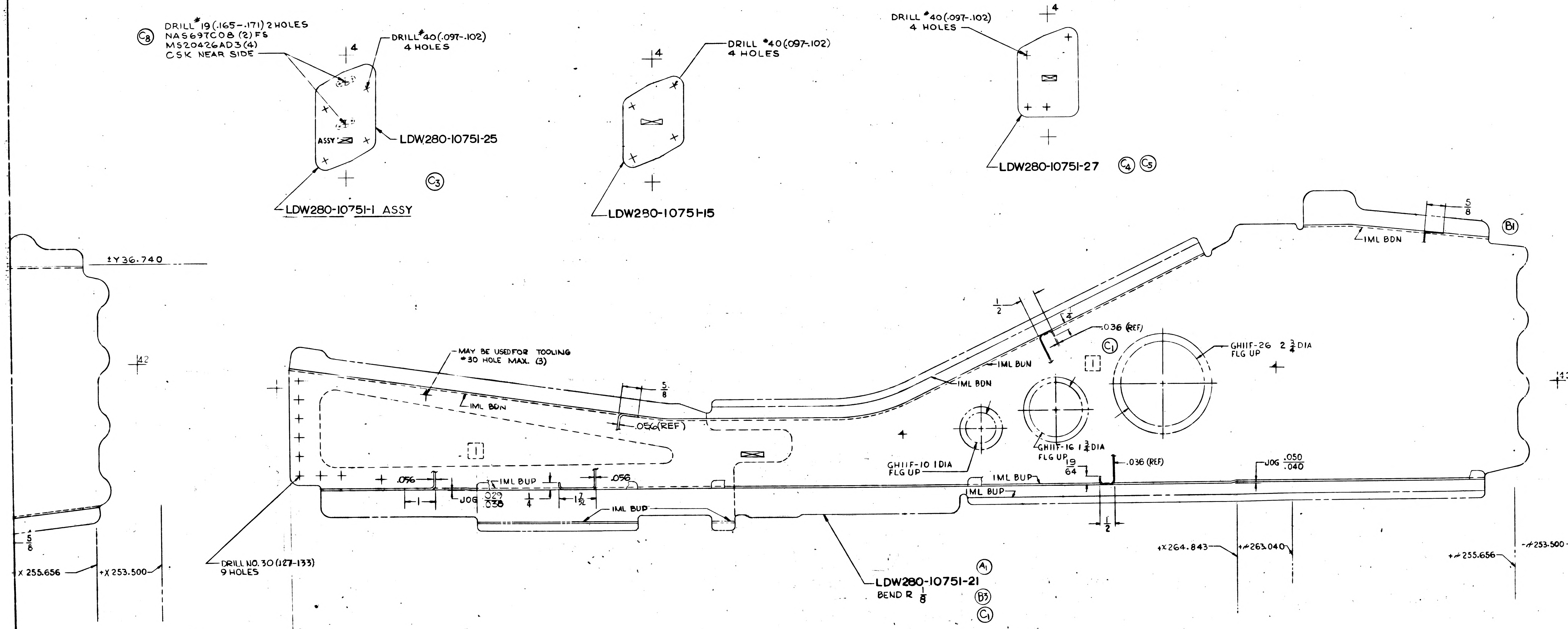


DRILL #19 (.165-
NAS697C08 (
MS20426AD3
CSK NEAR SI
C8
5/8
IML BDN
1
39/64
.063 (REF)
±Y36.740
.063 (REF)
IML BDN
G-H11F-10 1 DIA FLG DN
G-H11F-16 1 3/4 DIA FLG DN
.036 (REF)
CHEM-MILL LINE
JOG .050/.040
IML BDN
1
.015 (REF)
.063 (REF) IML BDN
CHEM-MILL LINE
2
2
5/8
42
.030 (REF)
1/4
G-H11F-26 2 3/4 DIA FLG DN
MAY BE USED FOR TOOLING #30 HOLE MAX. (3)
DRILL NO. 30 (.127-.133) 7 HOLES
A1
LDW280-10751-23 B2
BEND R 1/8
1/2
IML BDN
IML BDN
IML BDN
5/8
+X 255.656
+X 253.500
DRILL
9 HOL

01/03 NAS 9-1100

CODE IDENT NO. 26512
LDW280-10751
SHEET 3

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS, EXCEPT AS NOTED
2. ALL ABBREVIATIONS IN ACCORDANCE WITH MIL STANDARD *12 B EXCEPT AS NOTED
RCS IS REACTION CONTROL SYSTEM.
3. HOT FORM -21 & -23 IN ACCORDANCE WITH LSP14-5300 A.



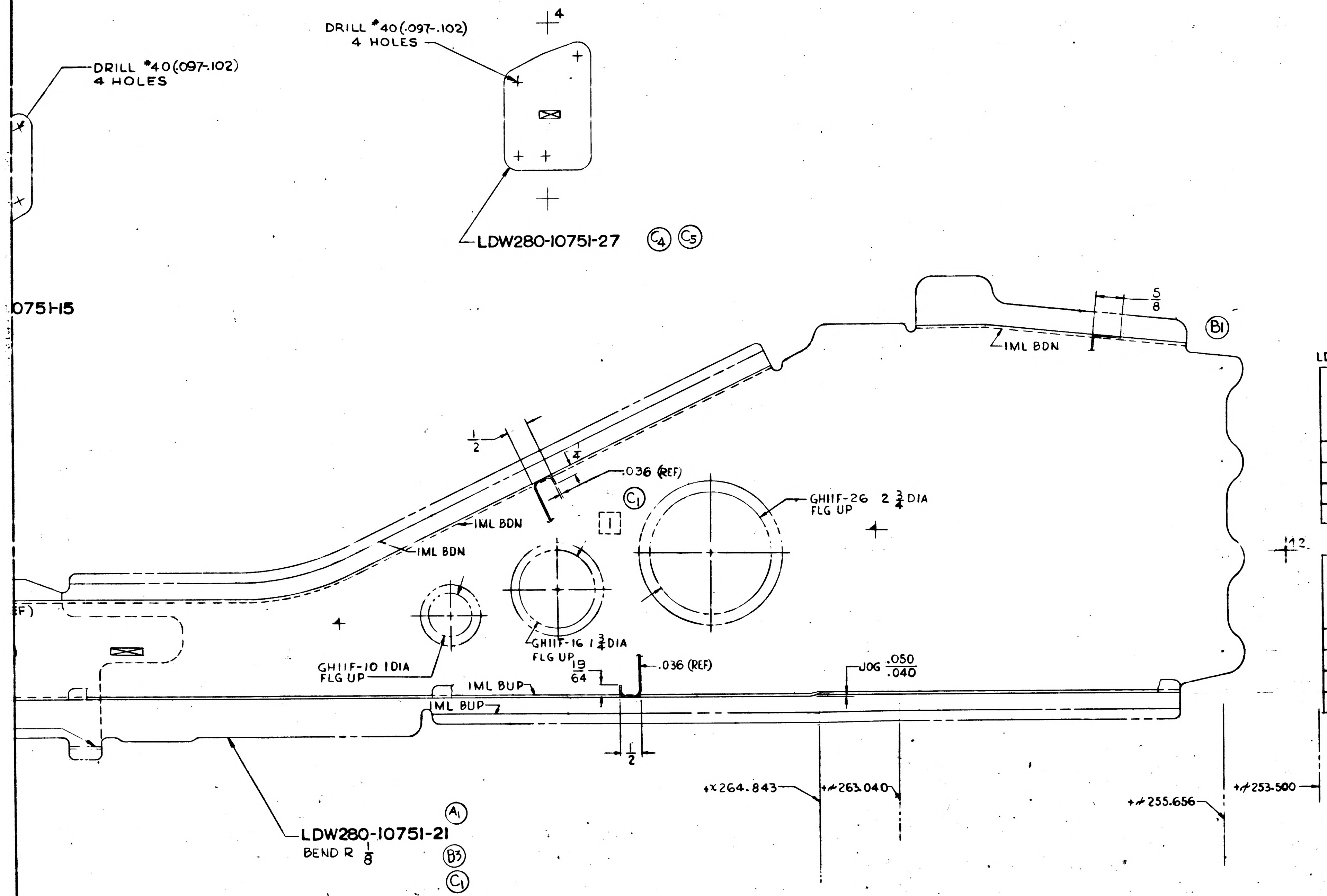
C8
DRILL *19 (.165-.171) 2 HOLES
NAS697C08 (2) FS
MS20426AD3 (4)
CSK NEAR SIDE
DRILL *40 (.097-.102) 4 HOLES
4
ASSY
LDW280-10751-25
LDW280-10751-1 ASSY
C3
DRILL *40 (.097-.102) 4 HOLES
LDW280-10751-15
DRILL *40 (.097-.102) 4 HOLES
LDW280-10751-27
C4 C5
B1
5/8
IML BDN
±Y36.740
42
MAY BE USED FOR TOOLING *30 HOLE MAX. (3)
IML BDN
5/8
.056 (REF)
1/2
1/4
.036 (REF)
C1
IML BDN
IML BDN
GHIIF-26 2 3/4 DIA FLG UP
GHIIF-16 1 3/4 DIA FLG UP
GHIIF-10 1 DIA FLG UP
19/64
.036 (REF)
JOG .050/.040
.056
IML BUP
.056
1
JOG .029/.038
1/4
1 7/32
IML BUP
IML BUP
IML BUP
1/2
5/8
X 255.656
+X 253.500
DRILL NO. 30 (127-133) 9 HOLES
LDW280-10751-21
BEND R 1/8
A1
B3
C1
+X 264.843
+X 263.040
+X 255.656
X 253.500
42
90

CODE IDENT NO. 26512
LDW280-10751 SHEET 3

02/03 NAS 9-1100

CODE IDENT NO 26512
LDW280-10751 SHEET 3

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS, EXCEPT AS NOTED
2. ALL ABBREVIATIONS IN ACCORDANCE WITH MIL STANDARD #12 B EXCEPT AS NOTED
RCS IS REACTION CONTROL SYSTEM.
3. HOT FORM -21 & -23 IN ACCORDANCE WITH LSP14-5300 A.


DRILL #40 (.097-.102)
4 HOLES
DRILL #40 (.097-.102)
4 HOLES
4
LDW280-10751-27
C4
C5
075I-15
5/8
B1
IML BDN
1/2
1/4
.036 (REF)
C1
GH11F-26 2 3/4 DIA
FLG UP
IML BDN
IML BDN
1
GH11F-16 1 3/4 DIA
FLG UP
GH11F-10 1 DIA
FLG UP
19/64
.036 (REF)
JOG .050/.040
IML BUP
IML BUP
1/2
+X264.843
+X263.040
+X255.656
+X253.500
LDW280-10751-21
BEND R 1/8
A1
B3
C1
12

90
25

LDW280-10751-21 (A1)

CHEM-MILL LINE TOLERANCE:
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	.036 ± .002	.020 (REF)

LDW280-10751-23 (A1)

CHEM-MILL LINE TOLERANCE
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	.015 ± .002	.048 (REF)
2	.036 ± .002	.027 (REF)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ✓ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 28x 105
PRINTING INFO ONLY
FULL SIZE SHEET AREA (30x 120) = 25 SQ. FT.
½ SIZE SHEET AREA (¼ OF FULL) = 6.250 SQ. FT.
PRINT TRIM LINE

LDW280-10751 C

LDW280-10751 C

03/03

NAS 9-1100

CODE IDENT NO 26512
LDW280-10751
SHEET 3

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	H	26512	LDW280-10751	C
	SCALE FULL		SHEET 3.00	3/3

K2

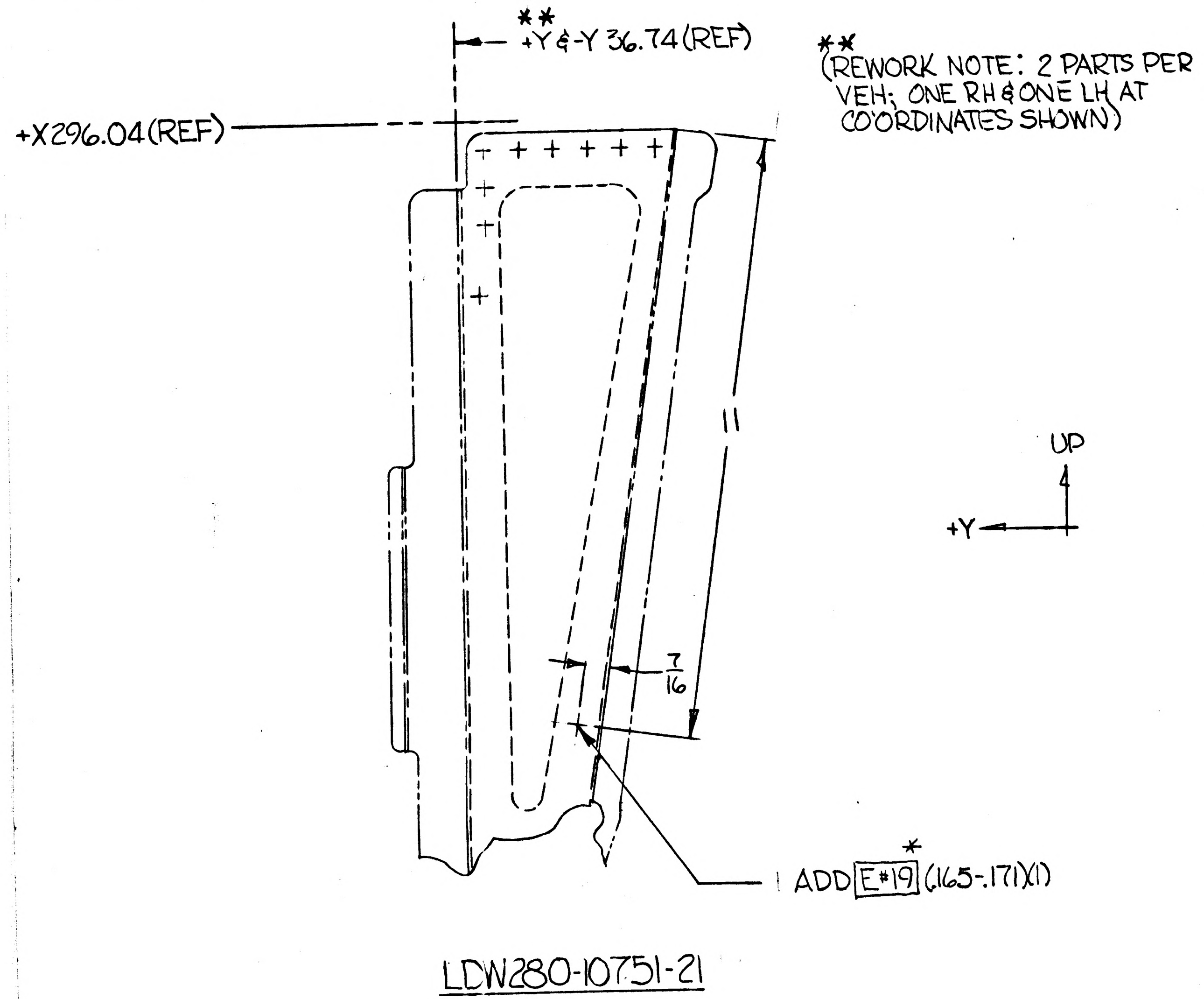
FOR PHOTO REPRODUCTION

ENG 73-6 6-64
3 FR

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO.	LDW280-10751	EO NO.	D1
CONTROL INFO NO.	LDW280A-6269		



** (REWORK NOTE: 2 PARTS PER VEH; ONE RH & ONE LH AT COORDINATES SHOWN)

* ADD TO KEY OF DWG

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG	LCD19-1077 & LCD19-1078

3

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
PROVIDE ELECTRICAL GROUND STUD MOUNT	ON-21 ADDED E#19 HOLE (1)	JK 4/4/7

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3(33)	
		THRU	
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY								
DATE	4/13/67			4/13/67	4/14/67		4/18/67	4/19/67
1	VD1	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~SOUT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	FFAME-A/S MIDSECT RCS FUEL TANK SUPPORT	LDW280-10751	D1

4/4/67
ISSUED BY T. BIANCHI/R. BIDONDE X1392 SECTION VD1 (EQUIP. LINES) GROUP NO. 332 PL 25

01
NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 834
CONTROL INFO NO. LDW280B-0903

FOR THE FOLLOWING DWGS; FOR DASH NO. NOTED *
ADD EFF: LFM-50 & PA-1(47) & NEXT ASSY.

LFM

(* USE APPLICABLE DASH NO. IN DESCRIPTION OF E.O.)

DWG. NO.	DASH NO.	No. REQD.	CHG. NO.	NEXT ASSY.
LDW280-10370	-19	2	D5	LDW280-54026
-10407	-17-19	2 EA.	D3	
-10426	-11	4	C2	
-10522	-11 -15,-16	2 4 EA.	B5	
-10546	-21-23-15,-19	2 EA.	C1	
-10547	-11-15	10	B4	
	-13-17	2EA.		
-10548	-13	4	C3	
-10549	-11,-17-18 -19	2 EA. 8	D3	
-10555	-11-17	4	B4	
	-13-15	2EA.		
-10556	-15	4	C3	
-10577	-11-13	2 EA	B3	
-10582	-11-13	2EA.	B4	
-10751	-21-23-27	2EA.	D2	
-10755	-13-23-19-21-25	2EA.	C1	
-10846	-19,-21,-13 -23,-15,-16	1 EA 2 EA	C3	LDW280-54026
	-17	2	B4	LDW280-54026
-11095	-11,-13,-15	2 EA		LDW280-23341
-11103	-15	2	A3	LDW280-54026
-11531	-11	2	B3	LDW280-54026
-11532	-11-15	2EA.	A5	LDW280-54026
-11096	-15-11-13	2	B2	LDW280-23340
-11103	-11-13	2 EA.	A3	LDW280-23340
-11015	-1-13	4 EA.	B4	LDW280-23278
	-15-17	8EA.		
-10978	-1-2	1 EA.	B3	LDW280-23278
-11073	-13-15	2EA.	A3	LDW280H10536
LDW280-10711	-11-13-15-17	2EA.	B2	LDW280H10536
LDW280H10752	-11-13	2EA.	A2	LDW280H10536
LDW280-14235	-11	8	A4	LTM280-26963
	-15-19	2EA.		LTM280-26969
	-17	1		
-14255	-11-12	1EA.	B1	LTM280-26963
-10790	-11-12 -15-17-18	1EA.	B6	
	-19-21-22	1EA.		
-10789	-25,-26,-27-28-29	1EA.	A6	
	-31-32	1EA.		
-11907	-11-13-15-17-21-23	1EA.	B2	
LDW280-11882	-13-15-17-19-21	1EA.	B1	LTM280-26963
LDW280H10536	-1-3	2 EA.	C4	LDW280-54026
LDW280-23328	-1	2	B5	LDW280-54026
LDW280-23278	-1-2	1 EA	C6	LDW280-23328
LDW280-23341	-1	2	A4	LDW280-23328
LDW280-23340	-1	2	A2	LDW280-23328

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD #2019 CCA 667

REASON FOR EO: UPDATE PA-1(47) TO LM-3 (33) CONFIG.

DESCRIPTION OF EO: FOR * ADDED PA-1(47) EFF.

GAEC EO RELEASE: JK

MODEL	EFFECTIVITY ~~PROCURING ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM #50	PA-1(47)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK NOT | SCRAP REQ

APPROVED BY								
DATE	1/8/68			1-8-68	1-9		1/10/68	1-11-68
—	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C
DRAWING TITLE: NOTED ABOVE
DRAWING NO.: LEO 280
EO NO. 834

1-9
ISSUED BY W. FALK SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01 NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LTM280-26813	LTA-1(11)	1 EA
	LDW907-10001	QUAL. TEST	3EA.
	LSK570-3002	IIIB SI	1EA.
	LSK570-3002	IIB SIM.	1EA
	LSC440-43100	LMS#2	1EA.
	LSC440-43100	LMS#1	1EA.
	LDW280-28218	LEM-2(32)	1EA.
	LDW280-28218	LEM-1(31)	1EA.
	LDW280-28218	LTA-8(18)	1EA.
	LDW280-23218	LEM-6(36)	1EA.
		LEM-5(35)	1EA.
		LEM-4(34)	1EA.
		LEM-3(33)	1EA.
LEM	LDW280-23218	LTA-3(13)	1EA.

PART NO. LDW 280-10753-11 THRU-18

GAEC SCH NO. 3/-1

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -18

GRUMMAN REL INFO

PRIM NO. 215 LE(001) PP12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM #1

DOCUMENTATION TYPE II

DRAWN BY	C. SCHNEIDER 1-4-66	RELIABILITY	—
LAYOUT BY	P. TORRACO		
CHECKED BY	1-8-66		
GR. LEADER	1/10/66		
VEH. DES. INT	W. BISCHOFF 1-10-66		
STRUCTURES	1-18	PROJ ENGR	2/2
STRUCTURES	Hildesman 1-31	REL GROUP	Lippincott 2/3/66
WEIGHTS	W. G. Naudsra 1-31		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASC MID-SECT. + Z27 B'H'D
RESTRAINT SYS. PULLEY

SIZE B

CODE IDENT NO. 26512

LDW280-10753

SCALE NONE

SHEET 1.00 OF 3

ENG 77.1 9-64

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10753-18	E	BRACKET	AL ALLOY SH	QQ-A-283	7075	.040×3 1/4×3 1/8	T6	88	
								-17						.040×3 1/4×3 1/8			
								-16						.040×3 1/4×3 1/8			
								-15						.040×3 1/4×3 1/8			
								-14						.040×4 1/4×2 7/8			
								-13						.040×4 1/4×2 7/8			
								-12						.040×3 5/8×2 7/8			
								LDW280-10753-11	E	BRACKET	AL ALLOY SH	QQ-A-283	7075	.040×3 5/8×2 7/8	T6	83	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10753

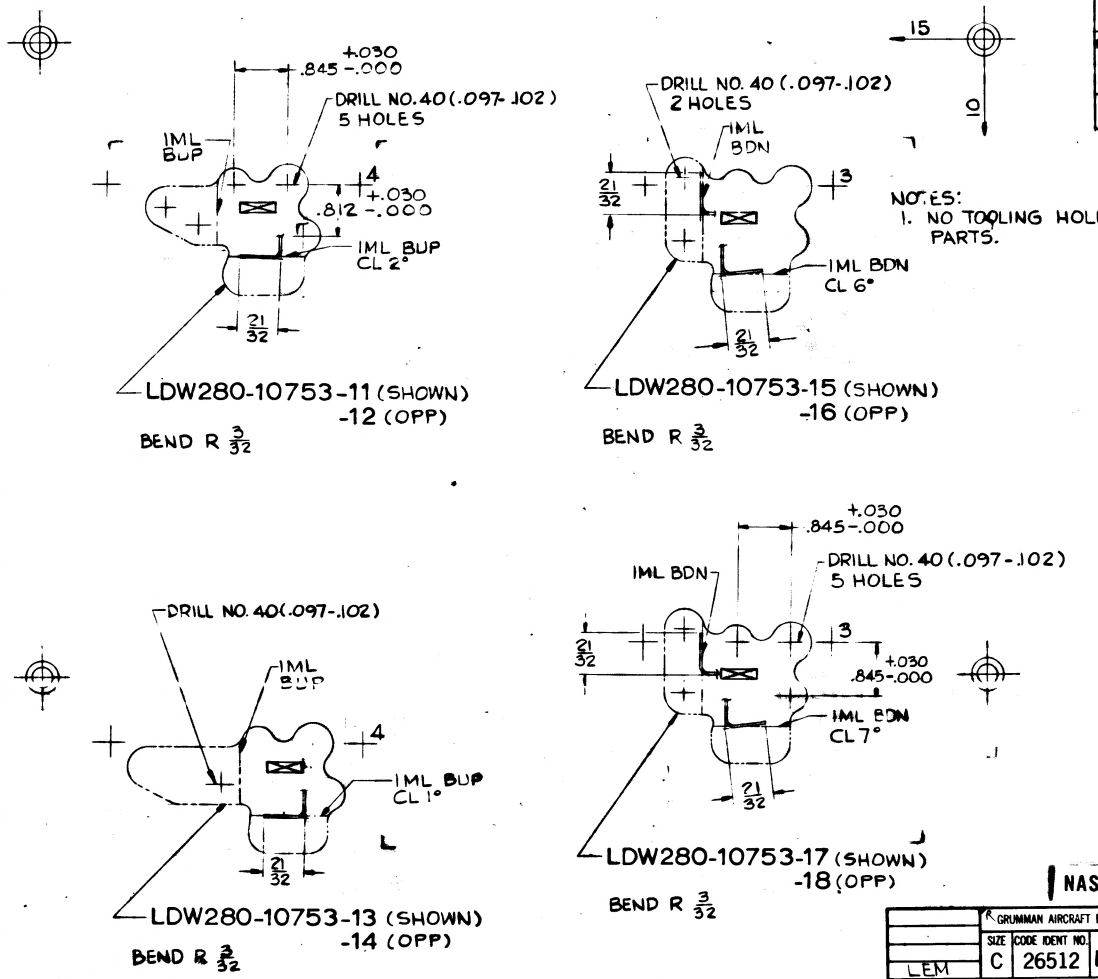
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



+.030
.845 -.000
DRILL NO. 40 (.097-.102)
5 HOLES
IML BUP
4
+.030
.812 -.000
IML BUP
CL 2°
21/32
LDW280-10753-11 (SHOWN)
-12 (OPP)
BEND R 3/32
DRILL NO. 40 (.097-.102)
2 HOLES
IML BDN
3
21/32
IML BDN
CL 6°
21/32
LDW280-10753-15 (SHOWN)
-16 (OPP)
BEND R 3/32
15
10
DRILL NO. 40 (.097-.102)
IML BUP
4
IML BUP
CL 1°
21/32
LDW280-10753-13 (SHOWN)
-14 (OPP)
BEND R 3/32
+.030
.845-.000
IML BDN
DRILL NO. 40 (.097-.102)
5 HOLES
3
21/32
+.030
.845-.000
IML BDN
CL 7°
21/32
LDW280-10753-17 (SHOWN)
-18 (OPP)
BEND R 3/32

TRAM A.Z.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED	✓
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LEM	C	26512	LDW280-10753
	SCALE FULL		SHEET 3.00

FOR PHOTO REPRODUCTION

01

22

GRUMMAN AIRCRAFT ENGINEERING CO.
CODE IDENT NO. 26512
ENGINEERING ORDER

FMO 30.2 REV 3-65

NO. LEO280	EO NO. 294
CONTROL INFO NO. LDW280 A0656	

* TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4 34

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280- 10719	A1	SEE DRAWING
- 10720	A1	↑
- 10723	B1	
- 10724	A1	
- 10726	B1	
- 10727	A1	
- 10739	A1	
- 10740	A1	
- 10744	A1	
- 10745	A1	
- 10750	A1	
- 10751	C2	
H 10752	A1	
- 10753	A1	
- 10755	B2	
- 10757	B2	
- 10760	B1	
- 10765	B4	
- 10766	B1	
- 10767	C1	
- 10768	A1	
- 10770	A1	
- 10771	A1	
- 10783	B1	
- 10784	A1	↓
LDW280- 10788	B1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO	DESCRIPTION OF EO	GAEC C EO RELEASE
ADDITIONAL REQUIREMENTS	FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.	FR 10/17/6

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CO TR UNIT NO.
LEM		LEM-7(37) LEM-8(38) LEM-9(39)	
LEM		LEM-10(40) LEM-11(41) LEM-12(42)	
LEM		LEM-13(43) LEM-14(44) LEM-15(45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
✓		NOT REQ'D		DATE	9/23/66			=	9-9		10-17-66	10-3-66
REVISE DWG	REVISE EO	REWORK	SCRAP		V.D.	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	CONT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	NOTED	LEO280	294

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL. 35

EMF

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO. | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO. | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28029	LEM2 (32)	1
LEM	LDW280-28029	LEM1 (31)	1
LEM	LDW280-28029	LTA-8 (18)	1

PART NO. LDW280-10754-11

GAEC SCH NO. 32-5

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -11

GRUMMAN REL INFO A

PRIM NO.	VE(001)	
215	PFSA	X

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED

FRACTIONS - DECIMALS - ANGLES

±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY R.LAMBERT 1-26-66

LAYOUT BY E.L.HARRIGAN (H)

CHECKED BY W.W. AW 1-31-66

GR LEADER 2/3/66

VEH DES INT 2/4/66

STRUCTURES AW 2-8

STRUCTURES Hilderman 2-10

WEIGHTS 2-11

RELIABILITY —

PROJ ENGR 2-21-66

REL GROUP 2-22-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

GANG CHANNEL

ASCENT STAGE-MID SECT-X253.5 DECK

SIZE B

CODE IDENT NO. 26512

LDW280-10754 A

SCALE NONE

SHEET 1.00 OF 4

ENG 77.1 9-64

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	~~SH CHG LTR~~	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
												REWORK	SCRAP			
A	1	1.00, 1.10, 2.00 & 3.00							EO A1	EO A1 INITIAL DWG. RELEASE PART MADE AS PER E.O.	NOTED	NOT	REQD	R. LAMBERT 1-26-66		

FOR CONTINUATION OF REVISIONS SEE SHEET

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B	CODE IDENT NO. 26512	LDW 280-10754	A
SCALE NONE			SHEET 1.10

ENG 77.3 5-64

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10754-11	E	GANG CHANNEL				MAKE FROM NAS 689P11-4	NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW 280-10754	A
SCALE NONE			SHEET 2.00

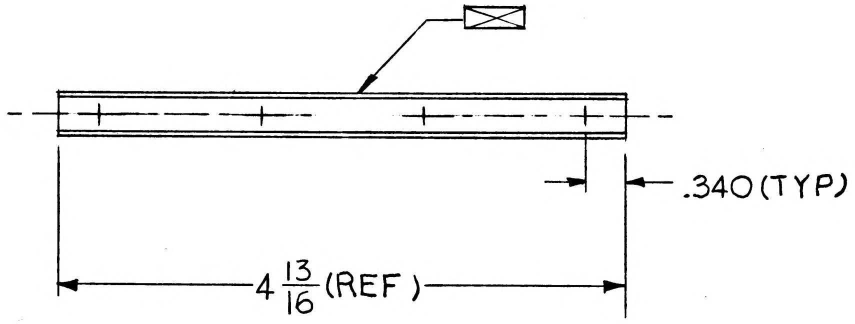
ENG 77.2 7-65

01

NAS 9-1100

NOTE:
1. NO TOOLING HOLES PERMITTED IN PART.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠	√



LDW 280-10754-11

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW 280-10754	A
SCALE FULL		SHEET 3.00	

ENG 73.1 6-64

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23026	LM-3(33)	2
LM	LDW280-23026	LTA-3(13)	2

PART NO. LDW280-10755-17

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54026	LM-15(45)	2
		LM-14(44)	2
		LM-13(43)	2
		LM-12(42)	2
		LM-11(41)	2
		LM-10(40)	2
		LM-9(39)	2
		LM-8(38)	2
		LM-7(37)	2
		LM-6(36)	2
		LM-5(35)	2
LM	LDW280-54026	LM-4(34)	2

PART NO. LDW280-10755-23

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54026	LM-15(45)	2
		LM-14(44)	2
		LM-13(43)	2
		LM-12(42)	2
		LM-11(41)	2
		LM-10(40)	2
		LM-9(39)	2
		LM-8(38)	2
		LM-7(37)	2
		LM-6(36)	2
		LM-5(35)	2
	LDW280-54026	LM-4(34)	2
LM	LDW280-23026	LM-3(33)	2

PART NO. LDW280-10755-25

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54026	LM-15(45)	2 EA
		LM-14(44)	2 EA
		LM-13(43)	2 EA
		LM-12(42)	2 EA
		LM-11(41)	2 EA
		LM-10(40)	2 EA
		LM-9(39)	2 EA
		LM-8(38)	2 EA
		LM-7(37)	2 EA
LM	LDW280-54026	LEM-6(36)	2 EA
LM	LDW280-54026	LEM-5(35)	2 EA
LM	LDW280-54026	LEM-4(34)	2 EA
LM	LDW280-23026	LEM-3(33)	2 EA
LM	LDW280-23026	LTA-3(13)	2 EA

PART NO. LDW280-10755-13, -19 & -21

GAEC SCH NO. 32.5

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED A-A

LAST DASH NO. USED -25

GRUMMAN REL INFO B

PRIM NO. 215 | JK(001) | MP-14 | 3-6/19

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ± 1/32 ±.020 ± 1/2

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM I

DOCUMENTATION TYPE II

DRAWN BY R NISBET 1-4-66

LAYOUT BY R BRACCO RB 1-20

CHECKED BY (L) 1·11·66

GR LEADER 1/24/66

VEH DES INT

STRUCTURES 2/3

STRUCTURES Hilderman 2/3

WEIGHTS 2-3

PROJ ENGR

REL GROUP 2/5

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHANNEL
ASCENT STAGE, MID SECTION
R.C.S. TANK SUPPORT

SIZE B

CODE IDENT NO. 26512

LDW280-10755 B

SCALE NONE

SHEET 1.00 OF 4

ENG 77.1 9-64

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00,1.10 2.00,3					✓	EO-A1 Ⓡ	DELETED -11 & -15, REPLACED WITH -19 & -21 RESPECTIVELY. IDENTICAL EXCEPT AS SHOWN 6" R. WAS 2 3/8 R. ON -11 & 15 SHEET 1 OF 4 WAS 1 OF 3, ADDED SHEET 1.10	LEM-3,-4,-5,-6 LTA-3		-11 -15	LAMBERT 5/9/66		
B	1	3.00						EO.-B1	TRIMMED -13	LTA-3, LM-3 THRU 6	✓		P. CAPPADORO 5-15-67		
	2	1.00						LEO280-294	FOR -13,-17,-19,& -21, ADDED LEM-7 THRU LEM-15 EFF.	LM7 THRU LM15	NOT	REQD			
	3	1.00,2.00 3.00						E.O. B3	ON SHT 1.00, 2.00, & 3.00 ADDED -23. ON SHT 1.00 EFF. OF -17 WAS LTA-3, LM-3(33) THROUGH LM-15(45) & REMOVED -11 (REF A1).	LTA-3(13) LM-3 THRU LM-15		-17			
	4							LEO.280-443	CANCELED BY LEO280-450	NOT REQD	NOT	REQD			
	5							LEO280-450	CANCELLED NOTED CHGS, ON LEO280-443						
	6	1.00,2.00 3.00					✓	E.O B6 LCD 1077, LCD 1076	CREATED -25	LM-3 THRU LM-15	NOT	REQD			
	7	3.00					✓	E.O. B7	REVISED E.O. B6. ADDED CALLOUTS TO -25. "DRILL # 40 (.097-.102) 3 HOLES" & DRILL # 19 (.165-.171) 1 HOLE. AS		✓				
	8	1.00							ON -13,-19 & -21, N/A LDW280-54026 WAS LDW280-23026 FOR LM-4 THRU LM-15 Rcm	LM-4 THRU LM-15	NOT	REQD			9/17/67

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10755	B
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10755-25	E	CLIP	AL ALLOY SH	QQ-A-250/4	2024-T3	.040x1 7/8 x2 5/8	NONE	88	
		LDW280-10755-23	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.32x2 3/4 x 3	T6	88	
		LDW280-10755-17	E	ANGLE	AL ALLOY SH	QQ-A-283	7075	.032X2 5/8X2 7/8	T6	88	
		LDW280-10755-21	E	CHANNEL	AL ALLOY SH	QQ-A-283	7075	.032X3 3/8X22 7/8	T6	88	
		LDW280-10755-13	E	CHANNEL	AL ALLOY SH	QQ-A-283	7075	.032X2 1/4X16 5/8	T6	88	
		LDW280-10755-19	E	CHANNEL	AL ALLOY SH	QQ-A-283	7075	.036X 5 X 19 1/4	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T-6	HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP 14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10755	B

SCALE NONE

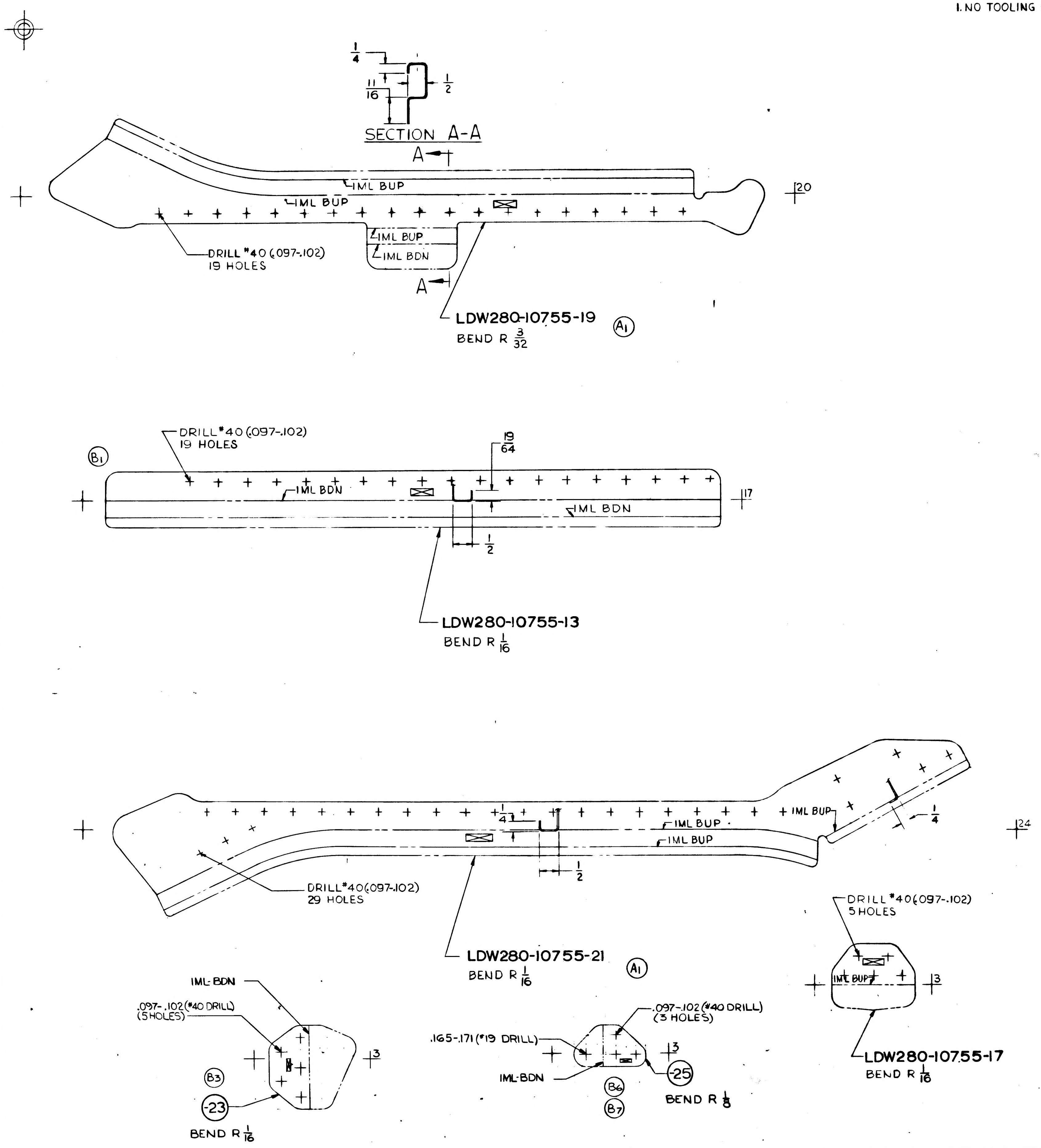
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS


1/4
11/16
1/2
SECTION A-A
A
IML BUP
IML BUP
IML BUP
IML BDN
DRILL #40 (.097-.102)
19 HOLES
A
LDW280-10755-19
BEND R 3/32
A1
20
DRILL #40 (.097-.102)
19 HOLES
B1
19/64
IML BDN
IML BDN
1/2
17
LDW280-10755-13
BEND R 1/16
1/4
IML BUP
IML BUP
IML BUP
1/4
24
1/2
DRILL #40 (.097-.102)
29 HOLES
LDW280-10755-21
BEND R 1/16
A1
DRILL #40 (.097-.102)
5 HOLES
IML BUP
3
LDW280-10755-17
BEND R 1/16
IML-BDN
.097-.102 (#40 DRILL)
(5 HOLES)
3
B3
-23
BEND R 1/16
.165-.171 (#19 DRILL)
.097-.102 (#40 DRILL)
(3 HOLES)
3
IML-BDN
B6
B7
-25
BEND R 1/8

01

NAS 9-1100

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED - IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
LEM	SIZE E	CODE IDENT NO. 26512	LDW280-10755	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

LDW280-10755 B

2 FOR PHOTO REPRODUCTION 1 K2

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 837
CONTROL INFO NO. LDW 280B-0903

FOR THE FOLLOWING DWGS; FOR DASH No. NOTED *
ADD EFF: LFM-50 & PA-1(47) & NEXT ASSY.

LFM

(* USE APPLICABLE DASH NO. IN DESCRIPTION OF E.O.)

DWG. No.	DASH No.	No. REQD.	CHG. NO.	NEXT ASSY.
LDW280-10370	-19	2	D5	LDW280-54026
-10407	-17-19	2 EA.	D3	
-10426	-11	4	C2	
-10522	-11 -15, -16	2 4 EA.	B5	
-10546	-21-23-15,-19	2 EA.	C1	
-10547	-11-15	10	B4	
	-13-17	2EA.		
-10548	-13	4	C3	
-10549	-11, -17-18 -19	2 EA. 8	D3	
-10555	-11-17	4	B4	
	-13-15	2EA.		
-10556	-15	4	C3	
-10577	-11-13	2 EA	B3	
-10582	-11-13	2EA.	B4	
-10751	-21-23-27	2EA.	D2	
-10755	-13-23-19-21-23	2EA.	C1	
-10846	-19,-21,-13 -23,-15,-16	1 EA 2 EA	C3	LDW280-54026
-11095	-17 -11,-13,-15	2 2 EA	B4	LDW280-54026 LDW280-23341
-11103	-15	2	A3	LDW 280-54026
-11531	-11	2	B3	LDW 280-54026
-11532	-11-15	2EA.	A5	LDW 280-54026
-11096	-15-11-13	2	B2	LDW 280-23340
-11103	-11-13	2 EA.	A3	LDW 280-23340
-11015	-1-13	4 EA.	B4	LDW 280-23278
	-15-17	8 EA.		
-10978	-1-2	1 EA.	B3	LDW280-23278
-11073	-13-15	2EA.	A3	LDW230H10536
LDW280-10711	-11-13-15-17	2EA.	B2	LDW280H10536
LDW280H10752	-11-13	2EA.	A2	LDW 280H10536 LTM280-26963
LDW280-14235	-11	8	A4	
	-15-19	2EA.		LTM280-26969
	-17	1		
-14255	-11-12	1EA.	B1	LTM280-26963
-10790	-11-12 -15-17-18	1EA.	B6	
	-19-21-22	1EA.		
-10789	-25,-26,-27-28-29	1EA.	A6	
	-31-32	1EA.		
-11907	-11-13-15-17-21-23	1EA.	B2	LTM280-26963
LDW280-11882	-13-15-17-19-21	1EA.	B1	LDW280-54026
LDW280H10536	-1-3	2 EA.	C4	LDW 280-54026
LDW280-23328	-1	2	B5	LDW 280-23328
LDW280-23278	-1-2	1 EA	C6	LDW 280-23328
LDW280-23341	-1	2	A4	LDW 280-23328
LDW280-23340	-1	2	A2	

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD #2019 CCA 667

REASON FOR EO: UPDATE PA-1(47) TO LM-3 (33) CONFIG.

DESCRIPTION OF EO: FOR * ADDED PA-1(47) EFF.

GAEC EO RELEASE: JK

MODEL	EFFECTIVITY ~~PROCURING ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM #50	PA-1(47)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG ✓	RECORD EO	REWORK NOT	SCRAP REQ

APPROVED BY				GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
DATE 1/8/68				1-8-68	1-9		1/10/68	
—	VDI	SUPPORT	RELIAB. GROUP					

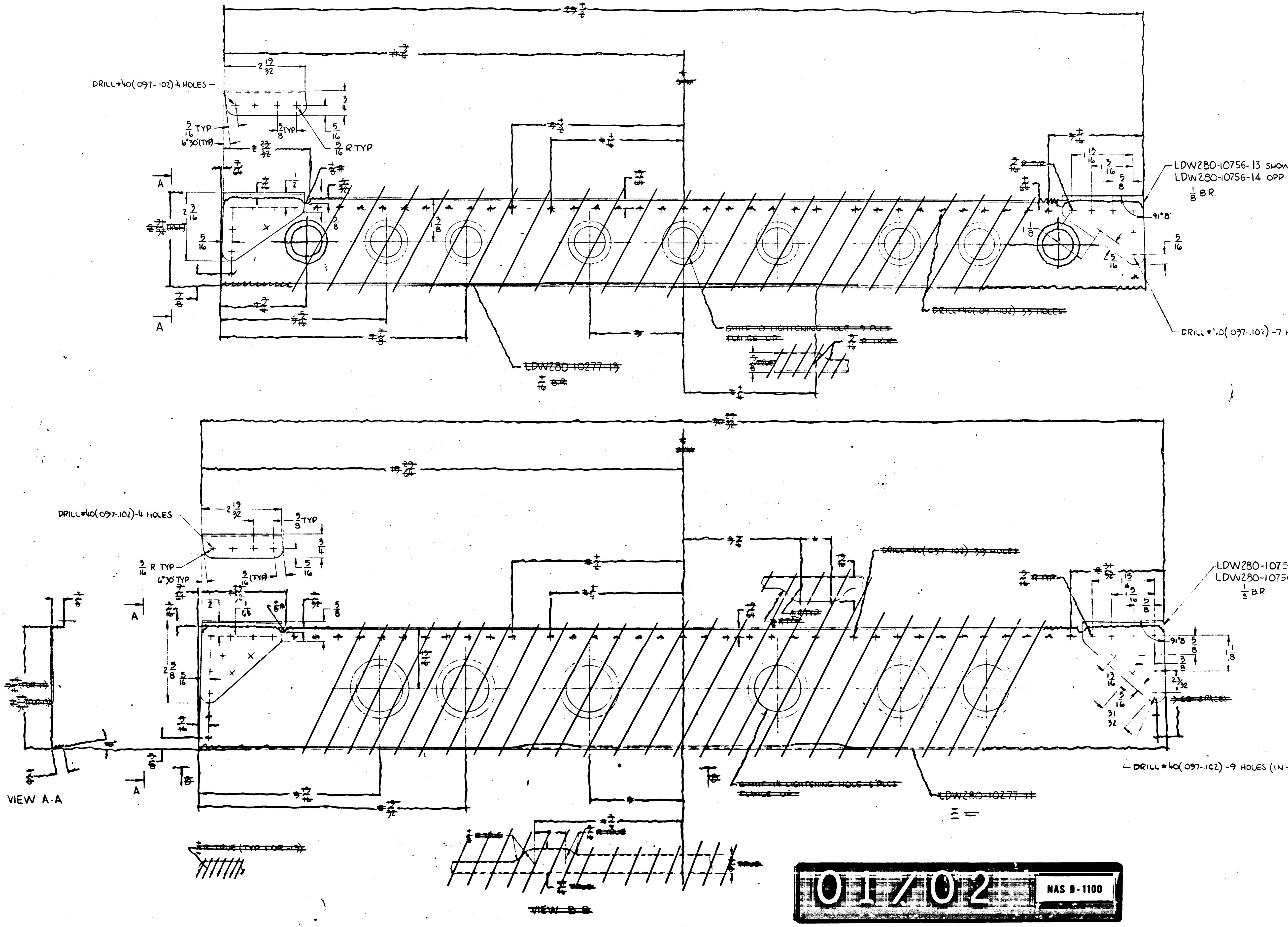
PRIORITY: C

DRAWING TITLE: NOTED ABOVE

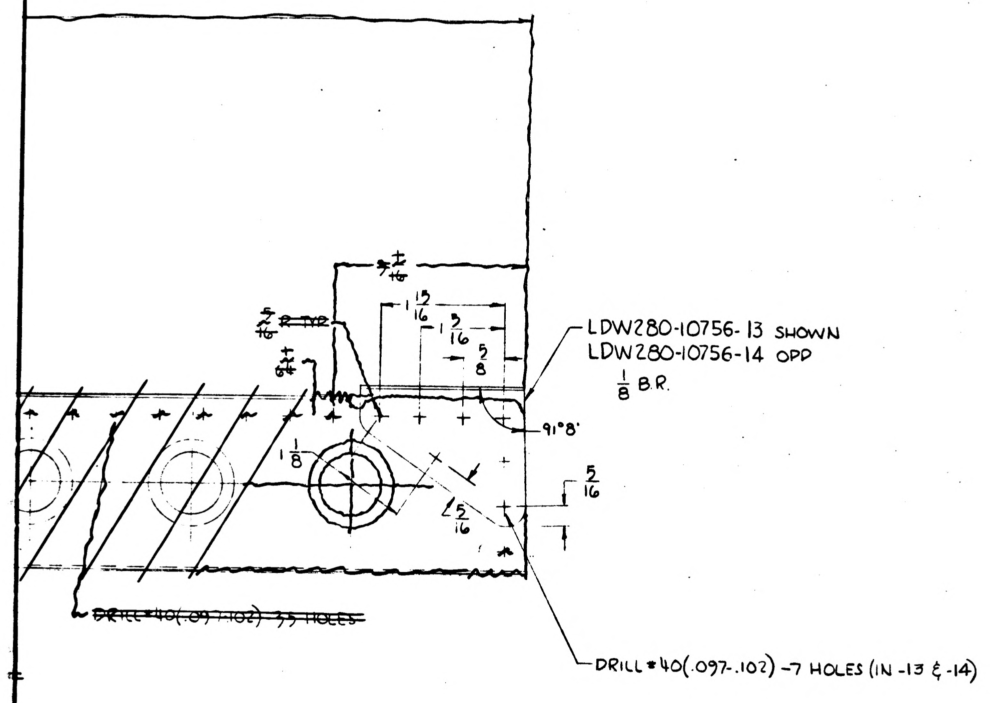
DRAWING NO.: LEO 280

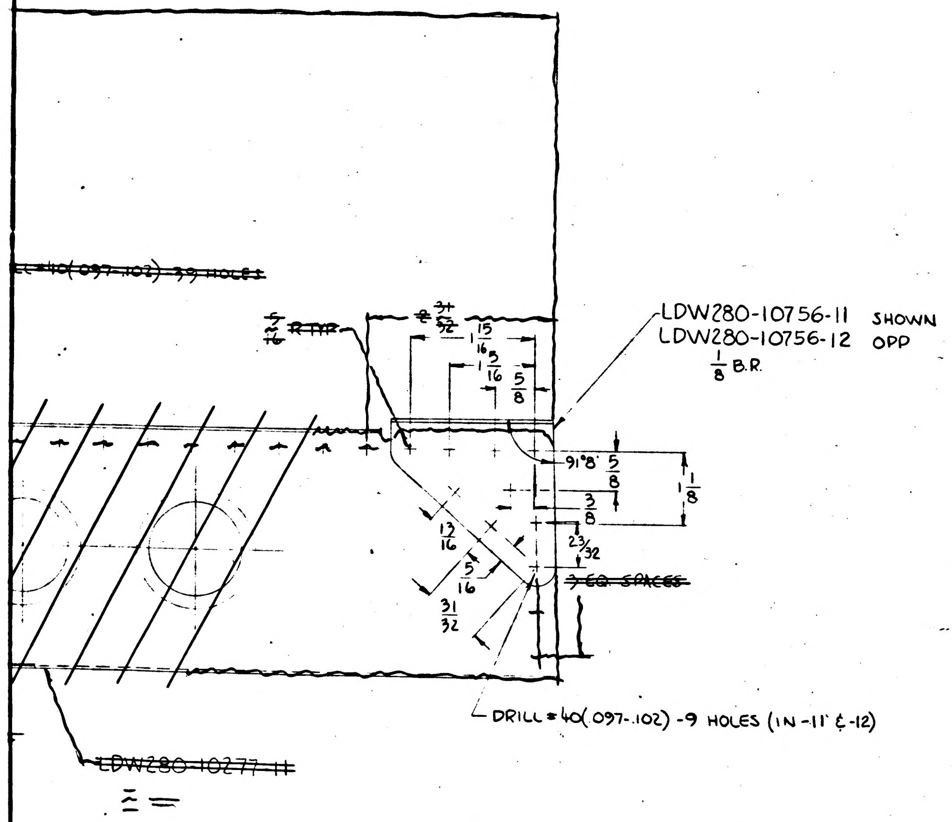
EO NO.: 837

1-9
ISSUED BY W. FAULK SECTION VEH. DES. INST. GROUP NO. 335 PL 25


DRILL #40(.097-.102)-4 HOLES
$2\frac{19}{32}$
$\frac{3}{4}$
$\frac{5}{16}$ TYP
6°30'(TYP)
$\frac{5}{8}$ TYP
$\frac{5}{16}$ R TYP
A
A
LDW280-10756-13 SHOW
LDW280-10756-14 OPP
$\frac{1}{8}$ B.R.
91°8'
$1\frac{15}{16}$
$1\frac{3}{16}$
$\frac{5}{8}$
$1\frac{1}{8}$
$\frac{5}{16}$
~~DRILL #40(.097-.102) 35 HOLES~~
DRILL #40(.097-.102) -7 H
~~LDW280-10277-13~~
~~LIGHTENING HOLE 9 PLCS~~
~~FLANGE UP~~
DRILL #40(.097-.102)-4 HOLES
$\frac{5}{16}$ R TYP
6°30' TYP
$\frac{5}{16}$ (TYP)
~~DRILL #40(.097-.102) 39 HOLES~~
LDW280-1075
LDW280-1075
$\frac{1}{8}$ B.R.
91°8'
$\frac{13}{16}$
$\frac{31}{32}$
$2\frac{3}{32}$
DRILL #40(.097-.102) -9 HOLES (IN
~~LIGHTENING HOLE 6 PLCS~~
~~FLANGE UP~~
~~LDW280-10277-11~~
VIEW A-A
~~VIEW B-B~~

01/02 NAS 9-1100





NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	G. S. S.	LSP14-9030

RECORD E. O.'s		
MODEL	E O NUMBER	MODULE NO.

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

MANUFACTURING OPERATIONS

NOTES CHECKED ✓ APPLY TO THIS DWG.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.	
250 FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .010R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ∮ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓

REVISIONS

REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY / DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MODULE NUMBER	DISPOSITION OF EXIST PARTS: RE-WORK	SCRAP	ENGRG APPD	GOVT APPD

DWG. SIZE 34 X

PRINTING INFO ONLY

FULL SIZE SHEET AREA (36 X)— SQ. FT.

¼ SIZE SHEET AREA (¼ OF FULL)— SQ. FT.

PRINT TRIM LINE

02/02 NAS 9-1100

QTY REQ'D PER ASSY			PART OR IDENTIFYING NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE
			LDW280-10756-14	E		ANGLE	AL ALLOY SH	QQ-A-283	7075	.050 x 3 3/8 x 3 3/4	T6	88		
			LDW280-10756-13	E		ANGLE	↑	↑	↑	.050 x 3 3/8 x 3 3/4	T6	88		
			LDW280-10756-12	E		ANGLE				.050 x 3 3/8 x 4 1/8	T6	88		
			LDW280-10756-11	E		ANGLE	AL ALLOY SH	QQ-A-283	7075	.050 x 3 3/8 x 4 1/8	T6	88		
			~~LDW280-10722-13~~	~~E~~		~~STIFFENER~~	~~STEEL SH~~	~~MIL-S-5059 COMP 301~~	~~301 1/4 H~~	~~.050~~	~~NONE~~	~~NONE~~		
			~~LDW280-10722-11~~	~~E~~		~~STIFFENER~~	~~STEEL SH~~	~~MIL-S-5059 COMP 301~~	~~301 1/4 H~~	~~.050~~	~~NONE~~	~~NONE~~		

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE	MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
			•				
LEM	LDW280-10105	LEM-2(32)	1 EA				
LEM	LDW280-10105	LEM-1(31)	1 EA				
LEM	LDW280-10105	LTA-8(18)	1 EA				
PART NO. LDW280-10756 ~~-13~~ -11-12-13-14		GRUMMAN SCH INFO		PART NO.	-	GRUMMAN SCH INFO 31-3	

TO BE REDRAWN ON PRODUCTION FORMAT

(3)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ± .020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

GRUMMAN REL INFO

PRIM. NO. VE(001) 215 PP12

DRAWN BY	JOE CALANDRA	12-4
CHECKED BY		
LAYOUT BY	J. CALANDRA	
GRP LDR	J PISATERI	12/4
VDI		12/4
STRUCT		12-10
STRUCT		12-11
WEIGHTS		12-13
RELIABILITY		
PROJ. ENG		12/17
RELEASE		12/18

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

ANGLE
ASCENT STAGE-FRONT FACE
CENTER PANEL +X266 & +X272

CONTRACT NO. NAS9-1100 DOCUMENTATION TYPE II

CODE IDENT NO. 26512 SIZE J LDW280-10756

SCALE FULL LINE ITEM # 1 SHEET 1

LDW280-10756

LDW280-10756

LDW280-10757 C

PART NO. LDW280-10757-16 — GAEC SCH NO. 45-

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28205	LM-2(32)	1
		LM-1(31)	1
		LTA-8(18)	1
	LDW280-28205	LTA-3(13)	1
	LTM280-26815	LTA-1(11)	1
	LDW280-28205	PA-1	1
LM	LDW280-28205	DESTRUCT TEST	1

PART NO LDW280-10757-19&-21

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54205	LM 15(45) THRU LM-4(34)	1EA
LM	LDW280-28205	LM-3(33)	1 EA

PART NO. LDW280-10757-15 — GAEC SCH NO. 45-

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28205	LM-2(32)	1
		LM-1(31)	1
		LTA-8(18)	1
	LDW230-28205	LTA-3(13)	1
	LTM280-26815	LTA-1(11)	1
LM	LDW280-28205	PA-1	1

PART NO. LDW280-10757-11 &-12 — GAEC SCH NO. 45-

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LTM280-26815	LTA-1(11)	1EA

PART NO. LDW280-10757-13&-14 — GAEC SCH NO. 45-

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54205	LM-15(45) THRU LM-4(34)	2EA
	LDW280-28205	LM-3(33)	2EA
		LM-2(32)	2EA
		LM-1(31)	2EA
		LTA-8(18)	2EA
	LDW280-28205	LTA-3(13)	2EA
	LTM230-26815	LTA-1(11)	2EA
	LDW280-28205	PA-1	2EA
LM	LDW280-28205	DESTRUCT TEST	2EA

PART NO. LDW280-10757-18 — GAEC SCH NO. 45-

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28205	LM-2(32)	1
		LM-1(31)	1
		LTA-8(18)	1
		LTA-3(13)	1
		PA-1	1
LM	LDW280-28205	DESTRUCT TEST	1

PART NO. LDW280-10757-17 — GAEC SCH NO. 45-

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28205	LM-2(32)	1
		LM-1(31)	1
		LTA-8(18)	1
		LTA-3(13)	1
LM	LDW280-28205	PA-1	1

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV	C	C	C	C						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO C		
		PRIM NO.	JL(001)	
LAST DASH NO. USED	-21	215	MP 14	C-7-10-67

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	VALENTINE		
LAYOUT BY	VALENTINE		
CHECKED BY			
GRLEADER	PHILLIPS		
VEH DES INT	BISCHOFF		
STRUCTURES	HILDERMAN	PROJ ENGR	KELLY
STRUCTURES	FEB	REL GROUP	LIPPINCOTT
WEIGHTS			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

PLATE
ASCENT STAGE-MID SECT-PROP PRESS
COUPLING MOUNT

SIZE	CODE IDENT NO.	DWG NO.	REV
B	26512	LDW280-10757	C

SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-10757 LAST REV "H" 7-28-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	APPD
											REWORK	SCRAP			
									RETRACED NO CHG LAST REV "A" 9-26-66 ADDED SH 1.10, 2 & 3, LOFTED DWG WAS DIMENSIONED	SUPPA	9-26-66			11-14-66	
B	1	1,1.10					✓	EO-B1	ON -13 THRU -18 N/A NOW: LDW280-28205 ON LTA-3, LM-3 AND LDW280-54205 ON LM-4, -5 & -6 WAS LDW280-23205.	NOTED	NOT REQD		SUPPA 9-26-66		
	2	1,1.10						LEO-280-294	FOR -13, -14, -15, -16, -17 & -18 ADDED LM-7 THRU LM-15 EFF.	NOTED	NOT REQD		SUPPA 11-11-66		
C	1	1.00,1.10						EO-C1	IN MODEL BLOCK FOR -11, -13, -14, -15, -16, -17, -18 FOR LTA-1 EFF N/A WAS LDW280-28205.	LTA-1(11)	NOT	REQ'D	H. DEUTSCH 7-5-67		7-10-67
	2	1.00,1.10							REF EO C1: FOR -17 & -18 N/A CHANGE "NOT APPLICABLE"						
	3	1.00, 1.10, 2.00, 3.00				✓		LCD 1426	FOR -15, -16, -17 & -18 REMOVED LM-4(34) THRU LM-15(45) EFF. ADDED -19 & -21 EFF LM-3(33) N/A LDW280-28205 & LM-4(34) THRU LM-15(45) N/A LDW280-54205.	LM-3 (33) THRU LM-15(45)		-15 -16 -17 -18			

CHG APPROVED	LTR	GROUP LDR	VEH. DES INT	STRUCTURES	STRUCTURES	WEIGHTS
	B	—		11/14		
	C	—	J.	N 7/7		

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10757	C
SCALE NONE		SHEET 1.10	

WG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10757-21	E	PLATE	AL ALLY SH	QQ-A-250/12	7075	.050 x 8 X 9	T6	88	
		LDW280-10757-19	E	PLATE	AL ALLY SH	QQ-A-250/12	7075	.050 X 9 X 10	T6	88	
		LDW280-10757-18	E	PLATE	AL ALLY SH	QQ-A-250/12	7075	.050x9 3/8x14 5/8	T6	88	
		-17		PLATE				.050x9 3/8x14 5/2			
		-16		ANGLE				.040x1 7/8x9 3/8			
		-15		ANGLE				.040x1 7/8x9 3/8			
		-14		GUSSET				.050x3 7/8x7 3/4			
		-13		GUSSET				.050x3 7/8x7 3/4			
		-12		PLATE				.050x9 3/8x14 5/8			
		LDW280-10757-11	E	PLATE	AL ALLY SH	QQ-A-250/12	7075	.050x9 3/8x14 5/8	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10757	C

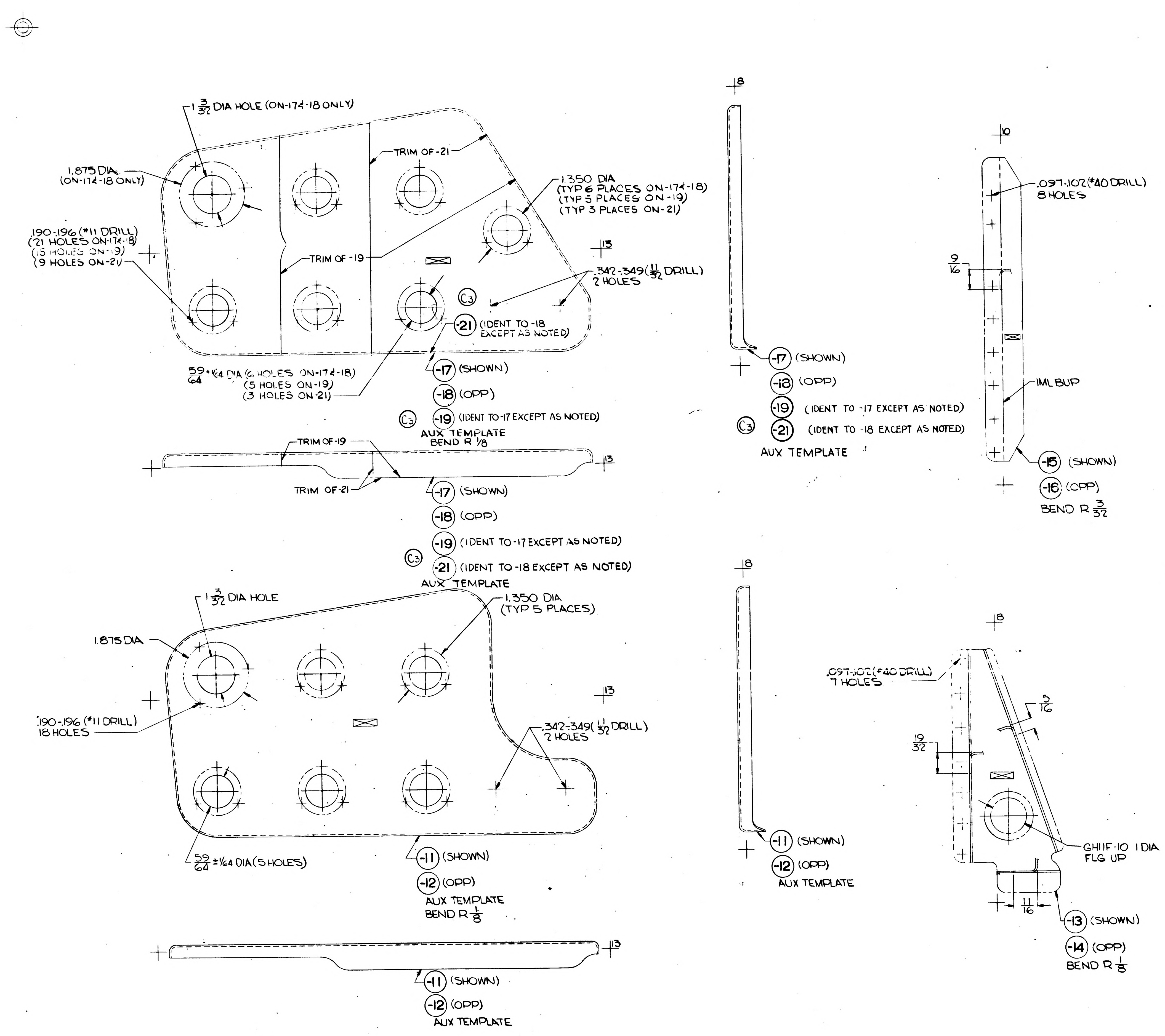
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


1 3/32 DIA HOLE (ON-17&-18 ONLY)
1.875 DIA (ON-17&-18 ONLY)
TRIM OF -21
1.350 DIA (TYP 6 PLACES ON-17&-18) (TYP 5 PLACES ON-19) (TYP 3 PLACES ON-21)
.190-.196 (#11 DRILL) (21 HOLES ON-17&-18) (15 HOLES ON-19) (9 HOLES ON-21)
TRIM OF -19
13
.342-.349 (11/32 DRILL) 2 HOLES
C3
-21 (IDENT TO -18 EXCEPT AS NOTED)
59/64 ±1/64 DIA (6 HOLES ON-17&-18) (5 HOLES ON-19) (3 HOLES ON-21)
-17 (SHOWN)
-18 (OPP)
C3
-19 (IDENT TO -17 EXCEPT AS NOTED)
AUX TEMPLATE
BEND R 1/8
TRIM OF -19
13
TRIM OF -21
-17 (SHOWN)
-18 (OPP)
-19 (IDENT TO -17 EXCEPT AS NOTED)
C3
-21 (IDENT TO -18 EXCEPT AS NOTED)
AUX TEMPLATE
1 3/32 DIA HOLE
1.350 DIA (TYP 5 PLACES)
1.875 DIA
13
.190-.196 (#11 DRILL) 18 HOLES
.342-.349 (11/32 DRILL) 2 HOLES
59/64 ±1/64 DIA (5 HOLES)
-11 (SHOWN)
-12 (OPP)
AUX TEMPLATE
BEND R 1/8
13
-11 (SHOWN)
-12 (OPP)
AUX TEMPLATE
18
-17 (SHOWN)
-18 (OPP)
-19 (IDENT TO -17 EXCEPT AS NOTED)
C3
-21 (IDENT TO -18 EXCEPT AS NOTED)
AUX TEMPLATE
18
-11 (SHOWN)
-12 (OPP)
AUX TEMPLATE
10
.097-.102 (#40 DRILL) 8 HOLES
9/16
IML BUP
-15 (SHOWN)
-16 (OPP)
BEND R 3/32
18
.097-.102 (#40 DRILL) 7 HOLES
5/16
19/32
GH1F-10 1 DIA FLG UP
11/16
-13 (SHOWN)
-14 (OPP)
BEND R 1/8
35
0

NOTE
1-NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	✓
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	✓
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

Q1 NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LM	SIZE E	CODE IDENT NO. 26512	LDW280-10757	C
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

K2

FOR PHOTO REPRODUCTION

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10757
EO NO. D1
CONTROL INFO NO LDW280B1126

IN MOD BLOCK:

REMOVE LTA-3 EFFECTIVITY FROM -13, -14, -15, -16, -17 & -18.

DETAIL SPEC REQ	✓	CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: PARTS NOT REQ'D ON LTA-3 (COR LIST)

DESCRIPTION OF EO: REMOVED LTA-3 EFF FROM -13, -14, -15, -16, -17 & -18.

GAEC EO RELEASE: JK 1/10/68 (5)

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-3(13)	

DRAWING CHANGE REC		DISPOSITION OF PARTS		APPROVED BY	JJS			FDR	CW		JAF	Botte
✓			-13, -14 -15, -16 -17, -18	DATE	1/8/68			1-8-68	1-9-68		1/8/68	1-?-68
REVISE DWG	RECORD EO	REWORK	SCRAP		V.D1.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	PLATE ~ ASCENT STAGE ~ M/S PROP PRESS COUPLING MOUNT.	LDW280-10757	D1

ISSUED BY J.J. ROGERS / F. DeRESPINIS X1392 SECTION VEH DES & INT GROUP NO. 335 PL 25

01

NAS 9-1100

ENG 22.2 REV 3-65

LFM

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO-280 | EO NO. 859
CONTROL INFO NO. LDW 280B 1790

** TO THE FOLLOWING DRAWINGS ADD OR REMOVE AS INDICATED

DRAWING No	DASH No*	NEXT ASSY	**	EFF	QTY	** ADD EFF	QTY	EO #	DWG TITLE	DISP OF PARTS
LDW 280- 11904	-11	LDW280-28205	ADD EFF	PA-1(47)	2	DMSM	1	A4	PLATE	NOT REQD
	-13				2		1			
	-21				2		1			
	-23				2		1			
	-25				2		1			
LDW280- 11904	-27		ADD' F		2		1		PLATE	
LDW280- 10757	-13		REVISED QTY 2EA WAS 1EA				1	D2	PLATE	
	-14					DMSM	1			NOT REQD
	-15		REMOVE EFF		1					SCRAP
	-16				1					
	-17				1					
	-18		REMOVE EFF		1					SCRAP
	-19		ADD EFF		2	DMSM	1			NOT REQD
LDW280- 10757	-21		ADD EFF	PA1(47)	2	DMSM	1		PLATE	
			REV. QTY WAS	EFF						
LDW280H-28204	-3		2 1	PA1(47)		DMSM	1	D1	PANEL ASSY	
LDW280H-28204	-4		2 1				1		PANEL ASSY	
LDW280M10689	-1		8 4				4	C3	FITTING ASSY	
LDW280M10690	-1		4 2				2	B3	FITTING	
LDW280M11271	-11		2 1				1	B2		
LDW 280 M11272	-11		2 1				1	B1		
LDW 280 M10697	-1		4 2				2	C1		
LDW 280 M10698	-1		2 1				1	B7	FITTING	
LDW280 M 10699	-1		4 2				2	B3	HOUSING	
LDW280M 10803	-1		4 2				2	C4	MOUNT	
LDW 280M 10915	-1		2 1				1	B4	MOUNT	
LDW 280M 10915	-2		2 1				1		MOUNT	
LDW 280-11068	-11		4 2				2	B2	BRACKET	
	-13		8 4				4		PLATE	
LDW280-11068	-15		4 2				2		BRACKET	
LDW280M11120	-1		4 2				2	B1	FITTING LH	
LDW 280M 11121	-1		2 1				1	B1	FITTING RH	
LDW280M 11121	-3	LDW 280-28205	2 1			DMSM	1		FITTING	
LDW 280M 11337	-11	LTM 280-25136	ADD EFF	PA1(47)	1			A2	FITTING	
LDW 280-53921	-1	LTM270-50C05			1			A4	SUPPORT INSTL	
LDW 280-11908	-11	LDW280-53921			1			A1	SHIM	
LDW280P11906	-11				2			A1	PLATE	
LDW280M11357	-11				1			A1	PLATE	
LDW 280M 11358	-11	LDW 280-53921	ADD EFF	PA-1(47)	2			A1	BUSHING	NOT REQD

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LED 2019 CCA667 PKG # 6 (5)

REASON FOR EO:
1. LM-3(33) UP DATE FOR PA-1 (47)
2 SUPPLY ADDITIONAL PARTS FOR WSTF EXTENDED TEST PROGRAM

DESCRIPTION OF EO: ON DASH *(**)

GAEC EO RELEASE: 2/7/68

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM-50	PA-1 (47)	
LM		DMSM (77)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK / SCRAP: NOTED

APPROVED BY / DATE: 2/2/68 (VD1); Perett 2/2/68 (~~SUPPORT~~ PROPULSION); RELIAB. GROUP; 2-2-68 (GROUP LEADER); CW 2-2-68 (STRESS GROUP); LIAISON ENGRG; 2/2/68 (PROJ ENGRG); AC 2/7/68 (REL)

PRIORITY: C

DRAWING TITLE: NOTED ABOVE

DRAWING NO.: LEO-280

EO NO.: 859

ISSUED BY: 2/1/68 J GRANDY X 7033 SECTION: VD1 GROUP NO. 335 PL 25

01 NAS 9-1100

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NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 1135
CONTROL INFO NO. LDW280B5698

TO THE FOLLOWING DASH 'S OF DWGS LISTED BELOW
ADD EFF. TEST (75)

DWG #	TITLE	DASH*	QUANTITY	N/A	E.O.#
LDW280-54205	PANEL ASSY A/S M/S PROP PRESS. MOD.	-1	1	LDW270-54201	E2
LDW280-10757	PLATE A/S - M/S PROP PRESS MOD	-13, -14, -19	1 EA	LDW280-54205	D3
LDW280-11904	PLATE A/S - M/S PROP PRESS MOD	-11, -13	1 EA	↑	A6
LDW280-11068	BRAKET A/S - M/S PROP PRESS. MOD	-11, -15 -13	1 EA 2		B3
LDW280-12073	PLATE A/S - M/S PROP PRESS. MOD.	-13	1		B1
LDW280M11208	FITTING A/S - M/S PROP PRESS. MOD	-11	1		A2
LDW280M10689	FITTING ASSY A/S - M/S PROP PRESS MOD.	-1	2		C4
LDW280M10915	MOUNT A/S - M/S PROP. PRESS MOD	-1	1		B5
LDW280M10803	MOUNT A/S - M/S PROP. PRESS. MOD	-1	1	↓	C6
LDW280M11271	FITTING A/S - M/S PROP PRESS. MOD	-11	1	LDW280-54205	B3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD 3461 CCA1368 PKG #1 (5)

REASON FOR EO: INST'L OF SOLENOID VALVE P/N LSC270-713-19-2 INTO APS MODULE P/N LDW270-54201-9

DESCRIPTION OF EO: TO THE DASH #'S LISTED * ADD EFF TEST (75)

GAEC EO RELEASE C

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		(75) TEST	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK NOT SCRAP REQ'D

				GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
APPROVED BY				JV ZOR			Jap	
DATE				11/2/68	10/ /68		10/7/68	10-8-68
VDI	SUPPORT	RELIAB. GROUP						

PRIORITY C
DRAWING TITLE SEE ABOVE
DRAWING NO. LEO. 280
EO NO. 1135

10-30-68
ISSUED BY P. WEISS (TT2 x86048 SECTION VDI GROUP NO. 280 PL 25

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 1319
CONTROL INFO NO. DW 280B6827

TO THE *DASH NOS LISTED OF THE FOLLOWING DWGS RESTRICT TO LM4(34) THRU LM14(44) WAS LM4(34) THRU LM15(45)

DWG #	TITLE	* DASH #	QUANTITY	N/A	EO#
LDW 280-12073	PLATE A/S - M/S PROP. PRESS. MODULE - PANEL	-13 & -15	1 EA	LDW 280-54205	B2
LDW 280-11904	PLATE A/S - M/S PROP. PRESS MODULE - PANEL	-11, -13 & -21-1 -23, -25 & -27	1 EA		B1
LDW 280-11068	BRACKET A/S - M/S PROP. PRESS. MODULE - PANEL	-13 -11 & -15	4 2 EA		B4
LDW 280-10757	PLATE A/S - M/S PROP. PRESS MODULE - PANEL	-19 & -21 -13, & -14	1 EA 2 EA		D4
LDW 280H28204	PANEL ASSY HONEYCOMB A/S - M/S PROP. PRESS MODULE	-3 & -4	1 EA	LDW 280-54205	D4
LDW 280M11156	BLOCK A/S - M/S PROP. PRESS MODULE	-1 & -2	4 EA	LDW 270-54201	B3
LDW 280-54205	PANEL ASSY A/S - M/S PROP. PRESS MODULE	-1 & -2-1	1 EA	LDW 270-54201	E4

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓	LCD 3587 PKG #11

REASON FOR EO: ELIMINATION OF CERTAIN EQUIP. IN THE LM15 A/S

DESCRIPTION OF EO: IN MOD BLK FOR * RESTRICTED TO LM4(34) - LM14(44) WAS LM4(34) - LM15(45)

EO RELEASE: (5) GAEC 3-27-69 (R) JK

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM15 (45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			✓

APPROVED BY	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
DATE	3/6/69			FDL 3/6/69			3/20/69	3-26-69

PRIORITY: C
DRAWING TITLE: SEE ABOVE
DRAWING NO.: LEO 280
EO NO.: 1319

4-15-69
ISSUED BY P. WEISSLITZ x86048 SECTION VDI GROUP NO. 335 PL 25

01
NAS 9-1100

LDW280-10758 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28123	TEST RIG	2 EA
	LDW280-53123	LEM-15(45)	1 EA
		LEM-14(43)	1 EA
		LEM-13(43)	1 EA
		LEM-12(42)	1 EA
		LEM-11(41)	1 EA
		LEM-10(40)	1 EA
		LEM-9(39)	1 EA
		LEM-8(38)	1 EA
		LEM-7(37)	1 EA
		LEM-6(36)	1 EA
		LEM-5(35)	1 EA
		LEM-4(34)	1 EA
	LDW280-53123	LEM-3(33)	1 EA
	LDW280-23123	LTA-3(13)	1 EA
	-28123	LEM-2(32)	1 EA
	-28123	LEM-1(31)	1 EA
LEM	LDW280-28123	LTA-8(18)	1 EA

PART NO. LDW280-10758-11, -13, -15, -17 & -19 — GAEC SCH NO. 31-1

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	3.00					
REV	A	A		A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -19

GRUMMAN REL INFO — PRIM NO. 215 — LE(001) MP17 — FR 4/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY P. SCHELL 21 MAR 66
LAYOUT BY G. ROCKLEIN
CHECKED BY 3-25-66
GR. LEADER 4/4/66
VEH. DES. INT
STRUCTURES EB 4/7/66
STRUCTURES Wilderman 4/7
WEIGHTS Lamont 4-13
RELIABILITY
PROJ ENGR 4-13-66
REL GROUP 4-15-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

PANEL
ASCENT STAGE ~ MID-SECTION ~
WATER MODULE SUPPORT INSTL

SIZE B — CODE IDENT NO. 26512 — LDW280-10758 A
SCALE NONE — SHEET 1.00 OF 4

ENG 77.1 12-65

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT. APPD
											REWORK	SCRAP			
A	1	1 & 1.10						LEO 280-91	SH.1 OF 4 WAS 1 OF 3 ADDED SH 1.10. ADD EFFECTIVITY FOR VENDOR TEST RIG.	VENDOR TEST	NOT	REQ'D	J. BRODA 6-8-66		
	2	1, 1.10 & 3						E.O. A2	IN FIELD FOR -11 REMOVED HOLE, 14 HOLES WAS 15 HOLES	LTA-3-8 LEM-1 THRU -6	✓		FOSTER		
	3								REF. E.O. A2 EFF. SHOULD INCLUDE TEST RIG	TEST RIG	✓		6-14-66		
	4	1.00 & 1.10						Ⓔ	IN MOD BLOCK, FOR -11, -13, -15, -17 & -19 N/A FOR LEM-3 THRU -6 WAS LDW280-23123, ADDED LEM-7 THRU LEM-15	LEM-3 THRU -15	NOT	REQD	D'AGOSTO 8-17-66 HR		

CHG APPROVED	LTR	GROUP LDR	VEH. DES. INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY					
	A			8/23								

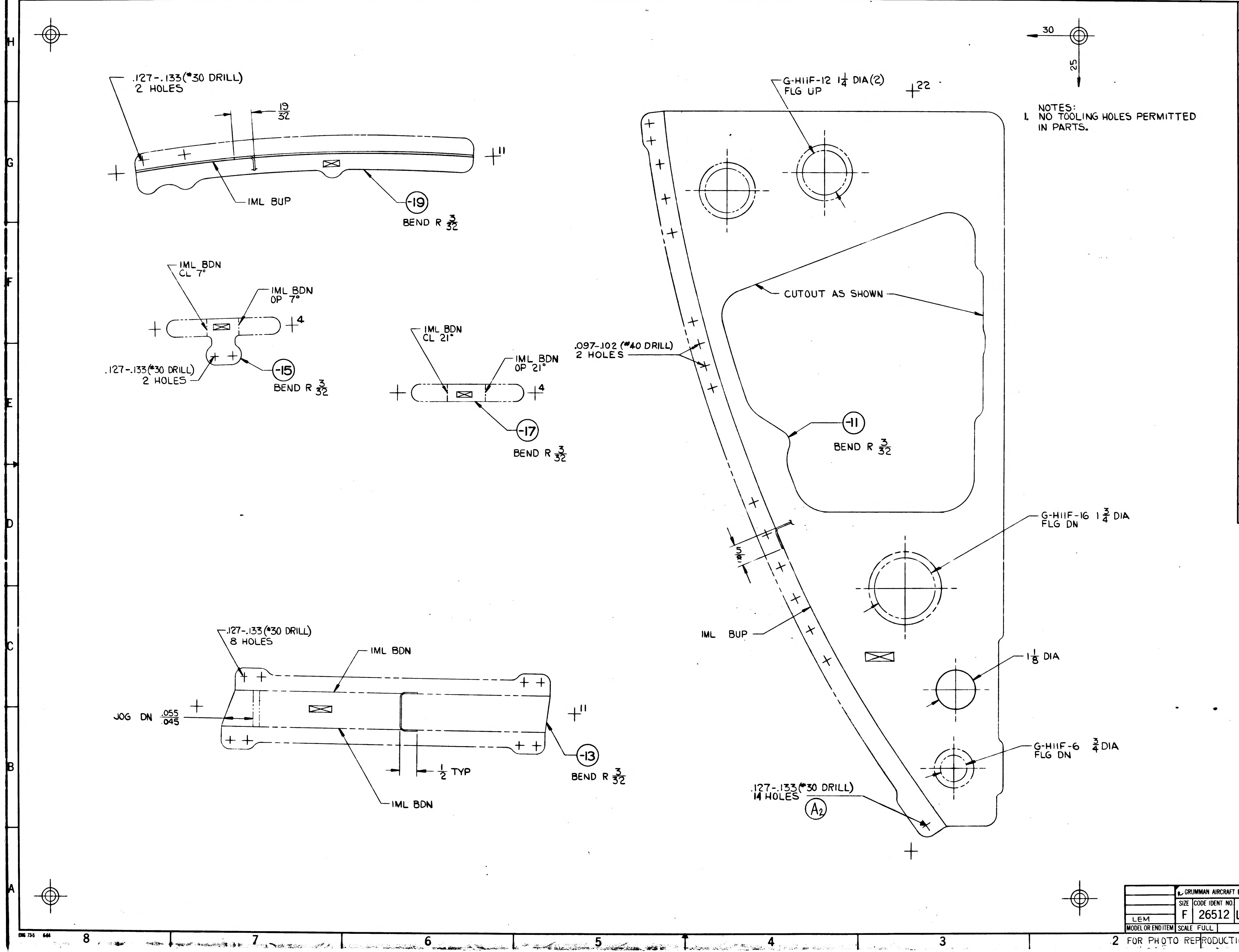
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10758	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100


.127-.133(#30 DRILL)
2 HOLES
19/32
+11
IML BUP
-19
BEND R 3/32
IML BDN
CL 7°
IML BDN
OP 7°
+4
.127-.133(#30 DRILL)
2 HOLES
-15
BEND R 3/32
IML BDN
CL 21°
IML BDN
OP 21°
+4
-17
BEND R 3/32
.127-.133(#30 DRILL)
8 HOLES
IML BDN
JOG DN .055/.045
+11
1/2 TYP
IML BDN
-13
BEND R 3/32
30
25
+22
G-H11F-12 1 1/4 DIA(2)
FLG UP
CUTOUT AS SHOWN
.097-.102 (#40 DRILL)
2 HOLES
-11
BEND R 3/32
.5
G-H11F-16 1 3/4 DIA
FLG DN
IML BUP
1 1/8 DIA
G-H11F-6 3/4 DIA
FLG DN
.127-.133(#30 DRILL)
14 HOLES
A2

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-10758 A

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

LEM	SIZE F	CODE IDENT NO. 26512	LDW280-10758	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10758-19	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.050 × 2¾ × 10¾	T6	88	
		-17		CLIP				.040 × 1¼ × 4⅛			
		-15		CLIP				.040 × 2⅛ × 4⅛			
		-13		CHANNEL				.040 × 3⅛ × 10⅜			
		LDW280-10758-11	E	PANEL	AL ALLOY SH	QQ-A-250/12	7075	.040 × 11¼ × 22¾	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP 14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10758

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 91
CONTROL INFO NO. LEM 330- 468

DWG NO	CHG NO	TITLE
✓ LDW 280-10617-11,-13,-15,-17,-19 *	A1	SUPPORT
✓ LDW 280-10758-11,-13,-15,-17,-19 *	A1	PANEL
LDW 280-10759-11,-13,-15,-17,-19 *	A1	CHANNEL
LDW 280-10760-11,-13,-15,-17,-19 *	A1	ANGLE
LDW 280M10834-1 *	A1	FITTING
LDW 280M10835-1 *	A1	FITTING
LDW 280M10836-1 *	A1	FITTING
LDW 280M10837-1 *	A1	FITTING
LDW 280-11025-11 *	A1	CLIP

FOR THE PRECEDING PARTS ADD THE FOLLOWING INFORMATION TO THE MODEL BLOCK.

LEM	LDW280-28123	TEST RIG	2
MODEL	NEXT ASSY	MODULE	REQD PER MODULE

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: TO ADD EFFECTIVITY FOR VENDOR TEST

DESCRIPTION OF EO: FOR * ADD EFFECTIVITY FOR VENDOR TEST RIG

Ⓡ GAEC EO RELEASE C
RIG VE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		VENDOR TEST	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: NOT REQD — REWORK | SCRAP

APPROVED BY								
DATE	4-13-66	4/15/66					4-15	4-11-66
	SECT ENG	~~SUPPORT~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C		LEO 280	91

ISSUED BY J ANZALONE 4/13/66 SECTION ENVIRON. CONTROL GROUP NO. 330 PL 35

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW 280-28123	TEST RIG	2
LEM	LDW 280-28123	LEM-1 (31)	1
LEM	LDW280-23123	LTA-3 (13)	1

LDW280-10759-1

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53123	LEM-15(45)	1
		LEM-14(44)	1
		LEM-13(43)	1
		LEM-12(42)	1
		LEM-11(41)	1
		LEM-10(40)	1
		LEM-9 (39)	1
		LEM-8(38)	1
		LEM-7(37)	1
		LEM-6(36)	1
		LEM-5(35)	1
		LEM-4(34)	1
LEM	LDW280-53123	LEM-3(33)	1
PART NO. LDW280-10759-21			

LDW280-10759 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28123	TEST RIG	2 EA
		LEM-2(32)	1 EA
		LEM-1(31)	1 EA
	LDW280-28123	LTA-8(18)	1 EA
LEM	LDW280-23123	LTA-3(13)	1 EA
PART NO. LDW280-10759-11&-13			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53123	LEM-15(45)	1 EA
		LEM-14(44)	1 EA
		LEM-13(43)	1 EA
		LEM-12(42)	1 EA
		LEM-11(41)	1 EA
		LEM-10(40)	1 EA
		LEM-9(39)	1 EA
		LEM-8(38)	1 EA
	LDW280-53123	LEM-7(37)	1 EA
	LDW280-28123	TEST RIG	2 EA
	LDW280-53123	LEM-6(36)	1 EA
		LEM-5(35)	1 EA
		LEM-4(34)	1 EA
	LDW280-53123	LEM-3(33)	1 EA
	LDW280-23123	LTA-3(13)	1 EA
	LDW280-28123	LEM-2(32)	1 EA
	LDW280-28123	LEM-1(31)	1 EA
LEM	LDW280-28123	LTA-8(18)	1 EA
PART NO. LDW280-10759-15 & -19		31-1	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.01	1.10	2.00	3.00				
REV	B	B	B	B	B				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	B-B	GRUMMAN REL INFO B		
LAST DASH NO. USED	-21	PRIM NO. 215	VE(001) MP-B	9-21-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.010 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM I
DOCUMENTATION TYPE II

DRAWN BY	P.CAPPADORO 3/21/66	RELIABILITY	
LAYOUT BY	G.ROCKLEIN		
CHECKED BY	3·21·66		
GR LEADER	3/18/66		
VEH DES INT	3/29		
STRUCTURES	3/31	PROJ ENGR	4-4-66
STRUCTURES	Hilderman 4/1	REL GROUP	4-6-66
WEIGHTS	4 4		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHANNEL
ASCENT STAGE, MID SECT, WATER MODULE
SUPPORT INSTL

SIZE B
CODE IDENT NO. 26512
LDW280-10759 B
SCALE NONE
SHEET 1.00 OF 5

ENG 77.1 12-65

01 NAS 9-1100

LDW280-10759 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53123	LEM-15(45)	1
		LEM-14(44)	1
		LEM-13(43)	1
		LEM-12(42)	1
		LEM-11(41)	1
		LEM-10(40)	1
		LEM-9(39)	1
		LEM-8(38)	1
		LEM-7(37)	1
		LEM-6(36)	1
		LEM-5(35)	1
		LEM-4(34)	1
	LDW280-53123	LEM-3(33)	1
	LDW280-28123	LEM-2(32)	1
LEM	LDW280-28123	LTA-8(18)	1

PART NO. LDW280-10759-3

GAEC SCH NO.

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET									
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED

GRUMMAN REL INFO

PRIM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO.
LINE ITEM
DOCUMENTATION TYPE

DRAWN BY
LAYOUT BY
CHECKED BY
PROJ ENGR
REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10759	B
SCALE	NONE	SHEET 1.01 OF 5	

ENG 77.1 12-65

01 NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1,1.10						LEO280-91	FOR -11, -13, -15, -17, -19 ADDED EFFECTIVITY FOR VENDOR TEST RIG. SH 1OF 4 WAS SH 1OF3 ADDED SH 1.10	TEST RIG	NOT	REQD	6/8/66		
	2	1,1.10,2 & 3						EO A2	ON -1 NAS1097AD3(4) (WAS) MS20426AD3(4)	LTA-3,-8 LEM-1,-2 -3,-4,-5&-6	✓				
	3							Ⓡ	REF EO A1 FOR-17 SHOULD BE FOR -1 GE	NOT REQD	NOT	REQD			6-22-66
B	1	1.00, 1.10 2.00 & 3					✓	EO-B1	CREATED -21. REMOVED LEM -3,-4,-5&-6 EFFECTIVITY FOR -11&-13. EXTENDED EFFECTIVITY OF -1,-15&-19 FOR LEM-7 THRU LEM-15.	LEM-3 THRU -15	-11	✓	JESAITIS 8-22-66		
	2	1,1.01,1.10, 2 & 3						E.O. B2	CREATED -3 ASSY & -23 DETAIL. (ADDED NOTES 2 & 3; SH. 1 OF 5 WAS 1 OF 4, ADDED 1.01).	LTA-8 & LEM-2 THRU LEM-15	NOT	REQD	CARLINO 9-6-66		
	3	1,1.10						②	IN MODEL BLOCK, ON -11 & -13 FOR LTA-3 N/A LDW280-23123 WAS LDW280-28123; ON-1 REMOVED EFF LTA-8 & LEM-2 THRU LEM-15, ON -15 & -19 FOR LEM-3 THRU LEM-6 N/A LDW280-53123 WAS LDW280-23123. ADDED SECTION A-A & B-B	LTA-3 & LEM-3 THRU LEM-6	✓			9/16	10-5-66

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS
A					
B			9/17		

ENG 77.16 3-66

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10759	B

SCALE NONE

SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY											
-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
6	2		NAS697A08	E	PLATE NUT	STD PART						
			NAS1097AD3		RIVET	STD PART						
1			LDW280-10795-23		HAT	AL ALLOY SH	QQ-A-250/12	7075	.040 x 4 1/8 x 4 1/8	T6	88	
			-21		CHANNEL				.045 x 3 1/4 x 21 5/8			
			-19		CHANNEL				.040 x 1 1/4 x 4 1/2			
	1		-17		CHANNEL				.040 x 3 1/2 x 4			
			-15		CHANNEL				.032 x 1 5/8 x 5 1/4			
			-13		ANGLE				.040 x 1 7/8 x 7 3/8			
			-11		CHANNEL	AL ALLOY SH	QQ-A-250/12	7075	.045 x 3 1/4 x 21 5/8	T6	88	
			-3		HAT ASSY							
			LDW280-10759-1	E	CHANNEL ASSY							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10759	B

SCALE NONE

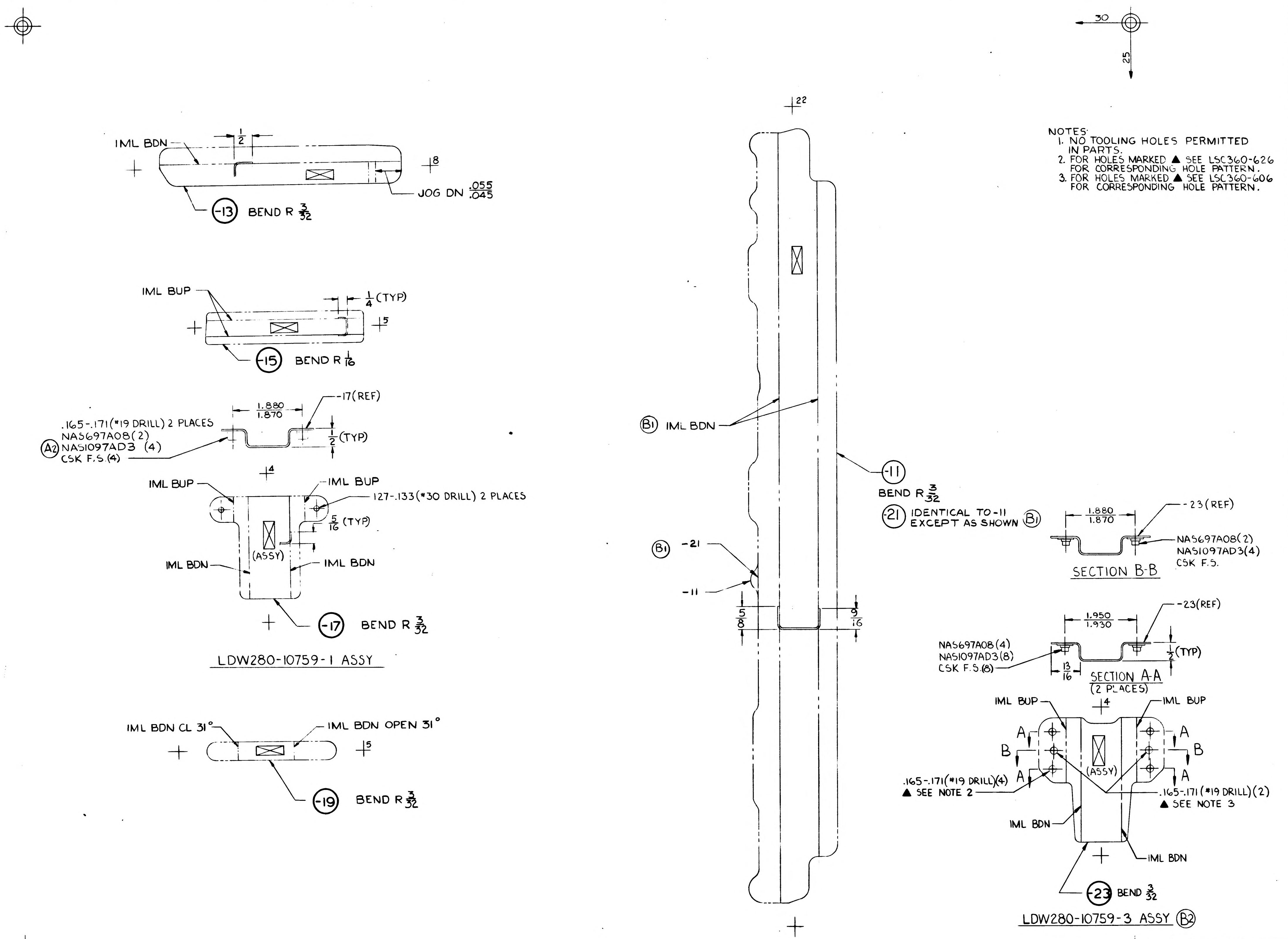
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. FOR HOLES MARKED ▲ SEE LSC360-626 FOR CORRESPONDING HOLE PATTERN.
3. FOR HOLES MARKED ▲ SEE LSC360-606 FOR CORRESPONDING HOLE PATTERN.


IML BDN
1/2
8
JOG DN .055/.045
-13 BEND R 3/32
IML BUP
1/4 (TYP)
5
-15 BEND R 1/16
1.880/1.870
-17 (REF)
.165-.171 (#19 DRILL) 2 PLACES
NAS697A08 (2)
A2 NAS1097AD3 (4)
CSK F.S. (4)
1/2 (TYP)
4
IML BUP
IML BUP
.127-.133 (#30 DRILL) 2 PLACES
5/16 (TYP)
(ASSY)
IML BDN
IML BDN
-17 BEND R 3/32
LDW280-10759-1 ASSY
IML BDN CL 31°
IML BDN OPEN 31°
5
-19 BEND R 3/32
22
B1 IML BDN
-11 BEND R 3/32
-21 IDENTICAL TO -11 EXCEPT AS SHOWN B1
B1 -21
-11
5/8
9/16
30
25
1.880/1.870
-23 (REF)
NAS697A08 (2)
NAS1097AD3 (4)
CSK F.S.
SECTION B-B
1.950/1.930
-23 (REF)
NAS697A08 (4)
NAS1097AD3 (8)
CSK F.S. (8)
13/16
1/2 (TYP)
SECTION A-A (2 PLACES)
IML BUP
IML BUP
4
A
B
A
A
B
A
(ASSY)
.165-.171 (#19 DRILL) (4) ▲ SEE NOTE 2
.165-.171 (#19 DRILL) (2) ▲ SEE NOTE 3
IML BDN
IML BDN
-23 BEND 3/32
LDW280-10759-3 ASSY B2

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-10759 B

LEM	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
MODEL OR END ITEM	SIZE F	CODE IDENT NO. 26512	LDW280-10759	B
	SCALE FULL		SHEET 3.00	

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K2

01 NAS 9-1100

ENG 32.1 REV 3-65

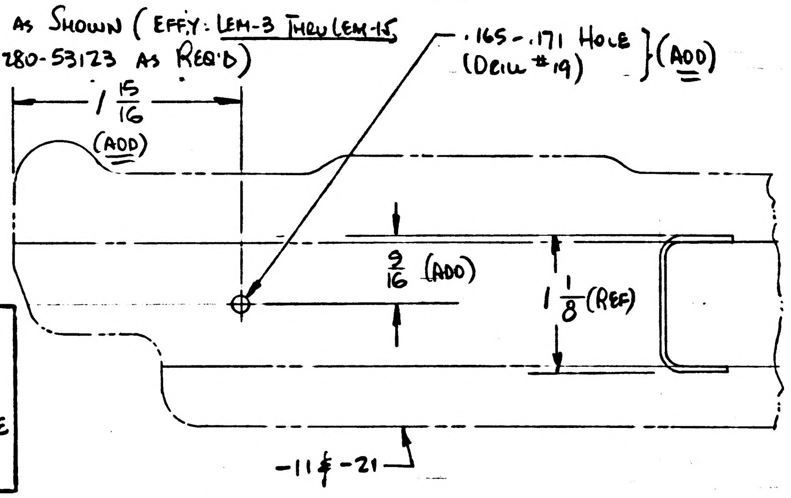
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW 280-10759		EO NO. C1
CONTROL INFO NO. LDW 280-9621		

Add Drilled Hole To -11 As Shown (Eff'y. LTA-8, LEM-1, LEM-2. Rework on N/A LDW 280-28123 As Req'd.

Add Drilled Hole To -21 As Shown (Eff'y: LEM-3 Thru LEM-15
Rework on N/A LDW 280-53123 As Req'd)



Partial Record E.O.
For LTA-3 only
This Change Not To Be
Inc. on LTA-3

Partial
Record
E.O.

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		3

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
To Provide Clamp Location For Water Hose	Added Drill Callout & Locating Dimensions To -11 & -21 Added E.O. To Record Block For LTA-3	FR

MODEL	EFFECTIVITY ~~PROCURING~~ ACTIVITY NO.	GAEC UNIT NO.	~~SUB CONTR UNIT NO.~~
LEM	LEM-1 (31) Thru LEM-15 (45)		
LEM	LTA-8 (18), LTA-3 (13)		

DRAWG CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓	✓	-11 -21	

	V.D.I	~~SUPPORT~~ WTS	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~[illegible]~~
APPROVED BY		LBG	—	—	GW			
DATE	8/15/66	9/9/66	—	—	8-31		9-7-66	9-6-66

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	Channel - Ascent Stage, Mid. Sect., Water Module, Support Inst'l.	LDW 280-10759	C1

ISSUED BY Geo. W. Rockleín x1441 8/15/66 SECTION Veh. Des. Int. GROUP NO. 335 PL 35

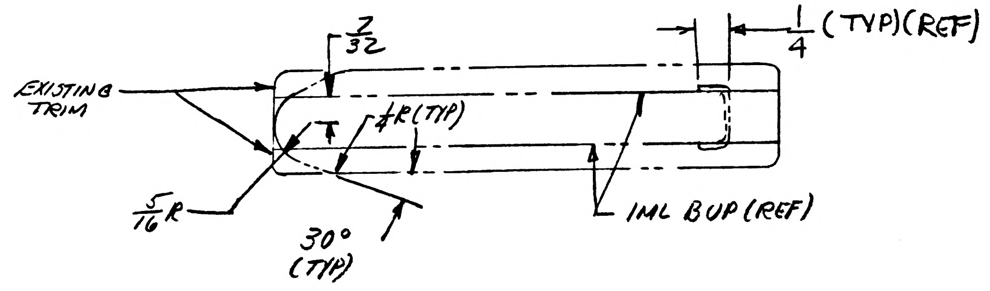
01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10759		EO NO. C2	
CONTROL INFO NO. LM5-9416			



REVISE TRIM-15 AS SHOWN

THIS EO IS A PARTIAL RECORD EO AGAINST LTA-3(13) & LTA-8 (18)
DO NOT INC. ON THESE VEHICLES.

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		5

REASON FOR EO	DESCRIPTION OF EO	Ⓔ GAEC EO RELEASE
TO INCREASE CLEARANCE WITH PRESSURE SUIT HOSE	REVISED TRIM-15 ADDED EO TO RECORD BLOCK FOR LTA-3 & LTA-8 ONLY.	FR

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-3(13) LTA-8(18)	
		LM-1(31) THRU	
		LM-15 (45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY	WT			~	JFJ	CH		
✓		✓		DATE	10/14/66			~	10-17-66	10-15-66	10-19-66	10-18-66
REVISE DWG	RECORD EO	REWORK	SCRAP	10/15/66	VD1	SUPPORT	RELIAB. GROUP	~~GROUP LEADER~~	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	CHANNEL - A/S M/S - WATER MODULE SUPPORT INSTL	LDW280-10759	C2

3rd SHIFT
ISSUED BY E.J. Colusky, 6455 SECTION VD1 GROUP NO. 335 PL 35 EMF

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW280-10759
EO NO. C3
CONTROL INFO NO. LDW280A-2207

IN B/M LDW 280-10795-23 SHOULD BE
LDW 280- 10759-23

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☐

3

REASON FOR EO: DRAWING CORRECTION

DESCRIPTION OF EO: IN B/M CORRECTED DWG NO. TO READ LDW280-10759-23 WAS LDW280-10795-23

Ⓡ GAEC C EO RELEASE: FR 10/20/6

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	NOT REQD.		
LM			

DRAWING CHANGE REQD: ✓ REVISE DWG / RECORD EO

DISPOSITION OF PARTS: NONE REQD (REWORK / SCRAP)

APPROVED BY: / DATE 10/15/66

VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
			— —	— —		RMC 10-15	10/20/66

PRIORITY: E

DRAWING TITLE: CHANNEL- A/S MID SECT. WATER MODULE SUPPT. INSTLN

DRAWING NO. LDW280-10759

EO NO. C3

ISSUED BY W.MANOS X-1441 10/15/66 SECTION VEH. DES. INT. GROUP NO. 335 PL 35 EMF

01 NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23123	LEM-6(36	1EA
	-23123	LEM-5(35)	
	-23123	LEM-4(34)	
	-23123	LEM-3(33	
	-23123	LTA-3(13)	
	-28123	LEM-2(32)	
	-28123	LEM-1(31)	
LEM	LDW280-28123	LTA-8(18)	1EA
PART NO. LDW280-10760-17, 19 & -21		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28123	TEST RIG	2EA
	LDW280-23123	LEM-6(36)	1EA
	-23123	LEM-5(35)	
	-23123	LEM-4(34)	
	-23123	LEM-3(33)	
	-23123	LTA-3(13)	
	-28123	LEM-2(32)	
	-28123	LEM-1(31)	
LEM	LDW280-28123	LTA-8(18)	1EA
PART NO. LDW280-10760-11, 13		GAEC SCH NO.	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A		
LAST DASH NO. USED	-19	PRIM NO. 215	VE(001) MP12	RS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO.	NAS 9-1100	LINE ITEM	1
DRAWN BY	RC MILLER 3-24-66		
LAYOUT BY	ROCKLEIN	RELIABILITY	
CHECKED BY	D.FASS 3-28-66		
GROUPLEADER	3/31/66		
VEH DES INT	3/31/66		
STRUCTURES	Feb	PROJ ENGR	4-6-66
STRUCTURES	Hilderman 4/2	REL GROUP	Botti 4-8-66
WEIGHTS	4-6		

DOCUMENTATION TYPE II

Ⓡ GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE-MID SECT-WATER MODULE

SIZE	CODE IDENT NO.		
B	26512	LDW280-10760	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 9-64

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00 1.10						E.O. A1	ADDED EFFECTIVITY FOR VENDOR TEST RIG (SH 1.00 OF 4 WAS 1.00 OF 3, ADDED SH 1.10)	VENDOR TEST	NOT	REQD	P. COMO 6-8-66 LB	☒	☒
	2							EO A2	SUPERSEDED BY EO A3	NOT REQD	NOT	REQD		☒	☒
	3	1.00, 1.10 2.00 & 3.00						EOA3	SUPERSEDES EO A2 IN FLD REMOVED -15 & ADDED -21, FOR -17, -19 ADDED (2) NO 40 (.097-.102) HOLES	LTA-3 & 8 LEM-1-2 -3-4-5-6		-15	T.F.K.EDP 7-1-66		

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY				
	A										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10760	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10760-19	E	SUPPORT	AL ALLOY SH	QQ-A-250/12	7075	.040X3¾X4⅝	T6	88	
		-17		SUPPORT			7075	.040X3¾X4⅞	T6		
		-21		PLATE			7075-T6	.040X2⅛X4⅜	NONE		
		-13		ANGLE			7075	.040X2⅛X4⅜	T6		
		LDW280-10760-11	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.040X2⅛X5⅜	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10760	A
SCALE NONE			SHEET 2.00

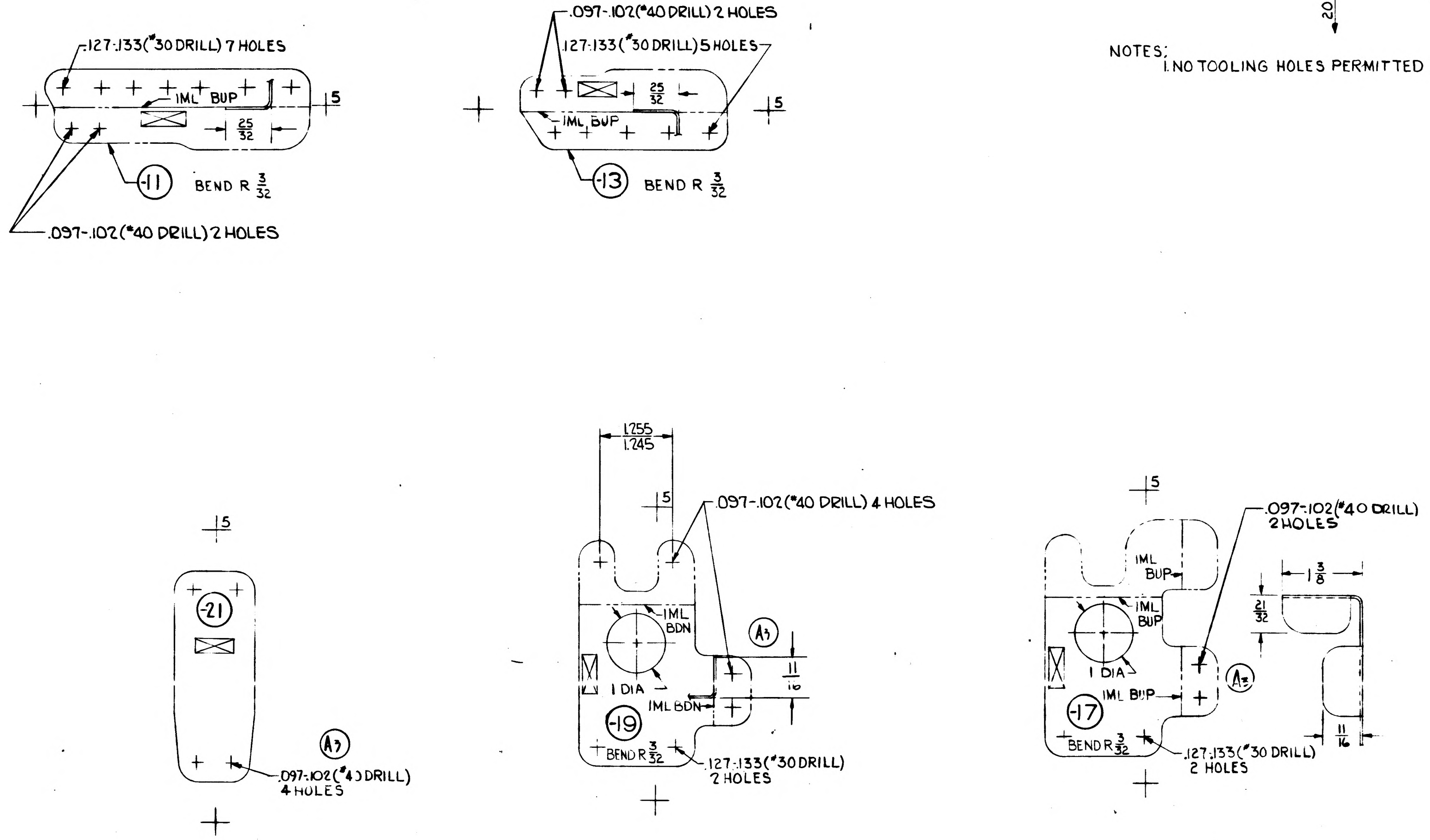
ENG 77.2 7-65

01

NAS 9-1100

LDW280-10760 A

NOTES:
1 NO TOOLING HOLES PERMITTED IN PARTS.



.127-.133(#30 DRILL) 7 HOLES
IML BUP
25/32
.5
-11
BEND R 3/32
.097-.102(#40 DRILL) 2 HOLES
.097-.102(#40 DRILL) 2 HOLES
.127-.133(#30 DRILL) 5 HOLES
IML BUP
25/32
.5
-13
BEND R 3/32
.5
-21
A7
.097-.102(#40 DRILL) 4 HOLES
1.255
1.245
.5
.097-.102(#40 DRILL) 4 HOLES
IML BDN
1 DIA
IML BDN
A7
11/16
-19
BEND R 3/32
.127-.133(#30 DRILL) 2 HOLES
.5
.097-.102(#40 DRILL) 2 HOLES
IML BUP
IML BUP
1 DIA
IML BUP
A7
1 3/8
21/32
11/16
-17
BEND R 3/32
.127-.133(#30 DRILL) 2 HOLES
25
20

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-10760 A

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

LEM	SIZE D	CODE IDENT NO. 26512	LDW280-10760	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

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NAS 9-1100

01

22

ENG 22.2 REV 3-66

GRUMMAN AIRCRAFT ENGINEERING CO.
CODE IDENT NO. 26512 *
ENGINEERING ORDER

NO. LEO280 | EO NO. 294
CONTROL INFO NO. LDW280 A0656

*TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4 34

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10719	A1	SEE DRAWING
-10720	A1	↑
-10723	B1	
-10724	A1	
-10726	B1	
-10727	A1	
-10739	A1	
-10740	A1	
-10744	A1	
-10745	A1	
-10750	A1	
-10751	C2	
H 10752	A1	
-10753	A1	
-10755	B2	
-10757	B2	
-10760	B1	
-10765	B4	
-10766	B1	
-10767	C1	
-10768	A1	
-10770	A1	
-10771	A1	
-10783	B1	
-10784	A1	↓
LDW280-10788	B1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ | CL III ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC C EO RELEASE: FR 10/17/6

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM-9(39)
LEM		LEM-10(40) LEM-11(41)	LEM-12(42)
LEM		LEM-13(43) LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

APPROVED BY: WP DATE: 9/23/66

GROUP LEADER: = STRESS GROUP: BW 9-19 LIAISON PROJ. ENGRG: AMC WR 10-17-66 GOVT: AC 10-3-66

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO: LEO280

EO NO. 294

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 260 PL. 35 EMF

01

NAS 9-1100

LDW280-10761 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53211	LEM-6(36)	1 EA
↕	↕	LEM-5(35)	1 EA
		LEM-4(34)	1 EA
LEM	LDW280-53211	LEM-3(33)	1 EA

PART NO. LDW280-10761-21

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23211	LTA-3(13)	1

PART NO. LDW280-10761-17 & -19

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28211	LEM-2(32)	1EA
↕	↕	LEM-1(31)	1EA
	LDW280-28211	LTA-8(18)	1EA
LEM	LDW280-23211	LTA-3(13)	1EA

PART NO. LDW280-10761-15

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28211	LEM-2(32)	1 EA
LEM	LDW280-28211	LEM-1(31)	1 EA
LEM	LDW280-28211	LTA-8(18)	1 EA
		32-2	

PART NO. LDW280-10761-11 & 13

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A B			
LAST DASH NO. USED	-21	PRIM NO.	LE(001)		
		215	M?12	A	>E.VA

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.015 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100 | LINE ITEM 1 | DOCUMENTATION TYPE II

DRAWN BY	ROCKLEIN 12-18-65		
LAYOUT BY	ROCKLEIN 12-18-65		
CHECKED BY			
GR LEADER	R.V.PHILLIPS 12/18/65		
VEH DES INT	BISCHOFF 12-21-65		
STRUCTURE	FCB 12-22-65	PROJ ENGR	KRAFT 1-13-66
STRUCTURE	HILDERMAN 12-22-65	REL GROUP	D. MARTIN 1-17-66
WEIGHTS	ROBESCH 12-27-65		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ZEE
ASCENT MID-SECT HEAT
EXCHANGER SUPPORT, +233.5

SIZE	CODE IDENT NO.		
B	26512	LDW280-10761	B
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-10761 "NO CHANGE" 12-18-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
		1.10, 1, 2 & 3							RETRACED, NO CHANGE - LAST REV. "NO CHANGE". SH. 1 OF 4 WAS 1 OF 1. ADDED NOTE 1. LOFTED DWG WAS DIMENSIONED. D.F.	LTA-8, LEM -1 & -2	NOT	REQD	JAEGGI 4-20-66		
A	1	1 & 3						EO A1	ON-11, FOR .040 JOG, $2\frac{3}{16}$ WAS $1\frac{31}{32}$ & $1\frac{3}{4}$ WAS $1\frac{17}{32}$. RCM		✓				
B	1	1.00, 1.10 2.00 & 3.00						EO B1	CREATED -17 & -19 ADD EFFECTIVITY OF -15 TO INCLUDE LTA-3(13)	LTA-3	NOT	REQD	A. STERNBERG 6-24-66		
	2							EO B2	CREATED -21	LEM-3, -4, -5, & -6	NOT	REQD			

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10761	B
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10761-21	E	ZEE	AL ALLOY SH	QQ-A-250/12	7075	.040x 3 1/2 x 8 3/4	T6	88	
		LDW280-10761-19	E	ZEE	AL ALLOY SH	QQ-A-250/12	7075	.050x 2 3/4 x 8 7/8	T6	88	
		LDW280-10761-17	E	ZEE	AL ALLOY SH	QQ-A-250/12	7075	.040x 3 1/2 x 8 3/4	T6	88	
		LDW280-10761-15	E	TEE	AL ALLOY EXTR	QQ-A-200/3	2024-T3511	DIE #89V1074x1 1/2	NONE	88	
		LDW280-10761-13	E	ZEE	AL ALLOY SH	QQ-A-250/12	7075	.050x2 3/4x8 3/8	T6	88	
		LDW280-10761-11	E	ZEE	AL ALLOY SH	QQ-A-250/12	7075	.040x3 1/2x8 3/8	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10761	B
SCALE NONE			SHEET 2.00

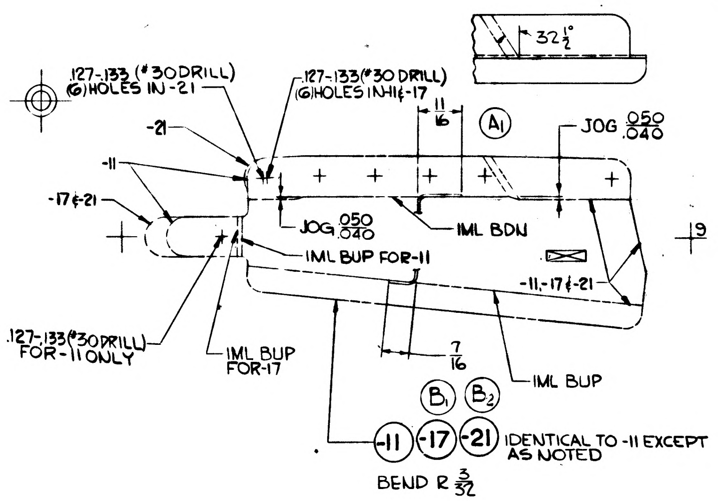
ENG 77.2 7-65

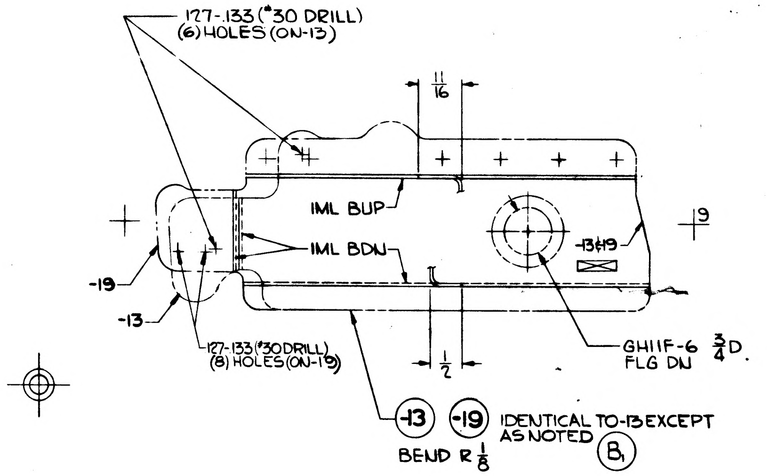
01

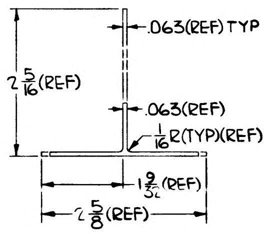
NAS 9-1100

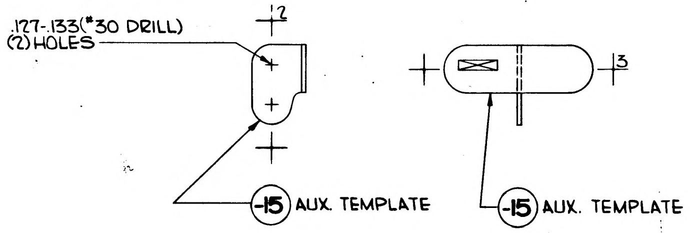
NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.


32½°
.127-.133 (#30 DRILL) (6) HOLES IN -21
.127-.133 (#30 DRILL) (6) HOLES IN -11 & -17
11/16
A1
JOG .050/.040
-21
-11
-17 & -21
JOG .050/.040
IML BDN
IML BUP FOR -11
-11, -17 & -21
9
.127-.133 (#30 DRILL) FOR -11 ONLY
IML BUP FOR -17
7/16
IML BUP
B1
B2
-11
-17
-21
IDENTICAL TO -11 EXCEPT AS NOTED
BEND R 3/32


.127-.133 (#30 DRILL) (6) HOLES (ON -13)
11/16
IML BUP
IML BDN
-13 & 19
9
-19
-13
.127-.133 (#30 DRILL) (8) HOLES (ON -19)
1/2
GH11F-6 3/4 D. FLG DN
-13
-19
IDENTICAL TO -13 EXCEPT AS NOTED
B1
BEND R 1/8


.063(REF) TYP
2 5/16 (REF)
.063(REF)
1/16 R(TYP)(REF)
1 9/32 (REF)
2 5/8 (REF)


.127-.133 (#30 DRILL) (2) HOLES
12
13
-15 AUX. TEMPLATE
-15 AUX. TEMPLATE

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL X DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-10761	B
	SCALE			SHEET 3.00

FOR PHOTO REPRODUCTION K2

LDW280-10761 B

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 515
CONTROL INFO NO. LDW280A 5759

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS* THAT ARE EFFECTIVE ON LM-6 (36) ADD EFFECTIVITIES FOR LM-7(37), LM-8(38), LM-9(39), LM-10(40), LM-11(41), LM-12(42), LM-13(43), LM-14(44), LM-15(45) QUANTITIES & N/A REMAIN THE SAME AS LM-6 (36)

DRAWING NUMBER	DASH NO. *	CHANGE NO.	TITLE	NEXT ASSY
LDW280-10761	-21	C1	ZEE EXCH SPT X 233.5	LDW280-53211
LDW280-10769	-11	B1	TUBE-X287.50 HAND GR	LDW280-23122
LDW280-10960	-23	C4	SUPT ASSY M/S X 244.0	LDW340-23325
LDW280-16007	-11 & -13	B4	GUSSET FILL DRAIN L.H.	LDW280-16000
LDW280-16035	-11	A1	SUPT-EMER STEAM VENT	LDW280-16000
LDW280M16101	-1	B1	FTG ENG INTER/F OXID.	LDW280-16000
LDW280M16102	-1	A1	FLANGE ENG INTRC FU	LDW280-16000
LDW280M16107	-1	A2	FLANGE ENG. INTRFC	LDW280-16000
LDW280P10585	-1 & -3	A1	INSUL CAB DK HAT SPT	LDW280-23168

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐ 3

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LM-7 (37) THRU LM-15 (45) EFFECTIVITIES.

GAEC EO RELEASE: JK 3/14/7

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-7(37) THRU LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		NOT REQ'D	

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY				✓	C.W.			
DATE	3/6/67			✓	3-7-67		3-8-67	3/10/67
6	VDI							

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LEO 280
EO NO.: 515

ISSUED BY A MAILA X1392 SECTION VEH. DES. INTFC GROUP NO. 335 PL 35

01 NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM	LDW280-28210	LEM-2(32)	1 EA
								LEM	LDW280-28210	LEM-1(31)	1 EA
								LEM	LDW280-28210	LTA-8(18)	1 EA
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW280-10762-11,-12,-15 & -16		GAEC SCH NO. 3/-4	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL^c INFO A		
		PRIM NO.	LE(001)	
LAST DASH NO. USED	-16	215	PP12	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS – DECIMALS – ANGLES
±1/32 ±.020 ±½°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	P.SCHELL 12/21/65	RELIABILITY	—
LAYOUT BY	J.J.OGOLIK		
CHECKED BY	Ⓜ 1-7-66		
GR.LEADER	J. Posateri 1/17/66		
VEH.DES.INT.	1/17/66		
STRUCTURES	1-31	PROJ ENGR	2/3
STRUCTURES	H. 2-1	REL GROUP	Bott. 2-4-66
WEIGHTS	A. Rabinowitz 2-1		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP
ASCENT STAGE-FRONT FACE, FLASH HEAD & ELECTRICAL PACKAGE

SIZE	CODE IDENT NO.		
B	26512	LDW280-10762	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 9-64

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00, 1.10, 2.00 & 3.00						E O A1 Ⓡ	IN FLD & B/M ADDED -15, -16 REMOVED -13 & -14, ADDED SH#1.10 SH 1.00 OF 4 WAS 1.00 OF 3.	LTA-8, LEM-1 & LEM-2		-13 & -14	NISBET 5-11-66	☒	☒

FOR CONTINUATION OF REVISIONS SEE SHEET ________

ENG 77.3 5-66

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10762	A
SCALE NONE		SHEET 1.10	

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10762-16	E	ANGLE	AL ALLOY SH	7075	QQ-A-283	050×2¼×4½	T6	88	
		LDW280-10762-15	E	ANGLE	AL ALLOY SH	7075	QQ-A-283	.050×2¼×4½	T6	88	
		LDW28-10762-12	E	CLIP	AL ALLOY SH	7075	QQ-A-283	.040×1¾×3¼	T6	88	
		LDW280-10762-11	E	CLIP	AL ALLOY SH	7075	QQ-A-283	.040×1¾×3¼	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						38	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10762	A
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

TRAM. D.J.

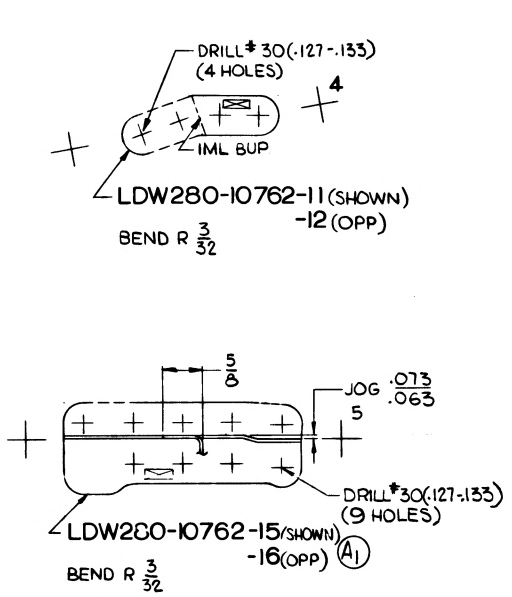
MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY ✓

TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32 ✓

LDW280-10762 A

NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS.


DRILL # 30(.127-.133)
(4 HOLES)
4
IML BUP
LDW280-10762-11 (SHOWN)
-12 (OPP)
BEND R 3/32
5/8
JOG .073/.063
5
DRILL # 30(.127-.133)
(9 HOLES)
LDW280-10762-15 (SHOWN)
-16 (OPP) A1
BEND R 3/32
15
10

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	C	26512	LDW280-10762	A
	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM	LDW280-28213	LTA-8(18)	1EA

PART NO.	GAEC SCH NO.	PART NO.	GAEC SCH NO.	PART NO.	GAEC SCH NO.
				LDW280-10763-11, -13, -15 & -17	32-4

3

SH REV STATUS: FOR DESCR.PTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-17

GRUMMAN REL^c INFO

PRIM NO.	VE(001)		
215	PP12		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	V.NARONIS 1/4/66	~~RELIABILITY~~	
LAYOUT BY	J.KOKYKORA 1/14/66		
CHECKED BY	1-7-66		
GR.LEADER	Phillips 1/21/66		
VEH.DES.INT.	2/9/66		
STRUCTURES	FED BW 2-18	PROJ ENGR	2/26
STRUCTURES	Hilderman 2-19	REL GROUP	Both 3-1-66
WEIGHTS	DJY 2-23		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE-RCS INTERCONNECT
& CROSSFEED VALVE SUPPORT

SIZE	CODE IDENT NO.	
B	26512	LDW280-10763

SCALE NONE
SHEET 1.00 OF 3

ENG 77.1 9-64

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10763-17	E	ANGLE	AL ALLOY EXTR	QQ-A-277	7075-T6511	AND10134-0702x3¼	NONE	88	
								LDW280-10763-15	E	ANGLE	AL ALLOY EXTR	QQ-A-277	7075-T6511	AND10134-0702x3¾	NONE	88	
								LDW280-10763-13	E	ANGLE	AL ALLOY EXTR	QQ-A-277	7075-T6511	AND10134-0702x3⅜	NONE	88	
								LDW280-10763-11	E	ANGLE	AL ALLOY EXTR	QQ-A-277	7075-T6511	AND10134-0702x3¼	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-10763

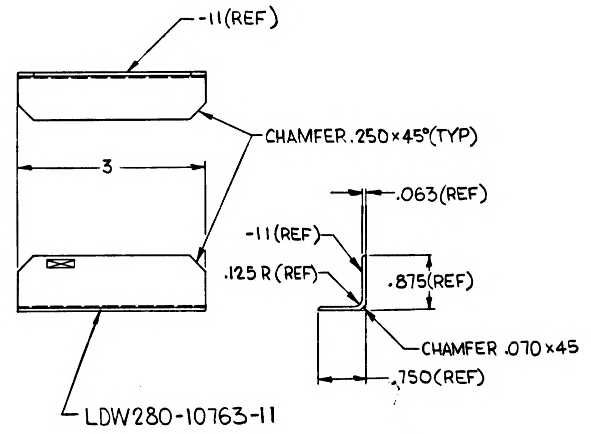
SCALE NONE
SHEET 2,00

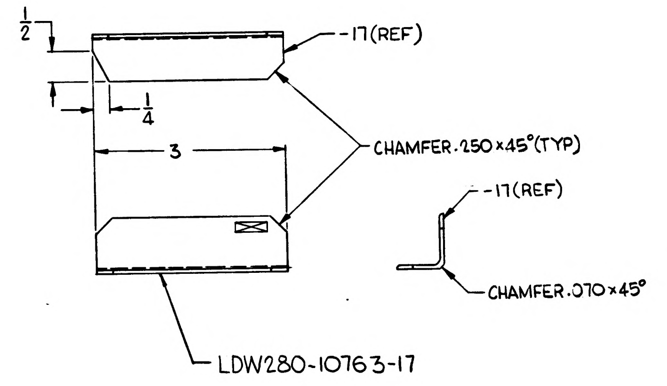
ENG 77.2 7-65

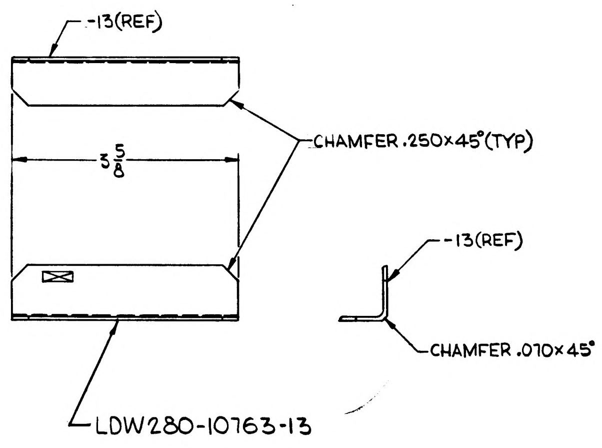
01

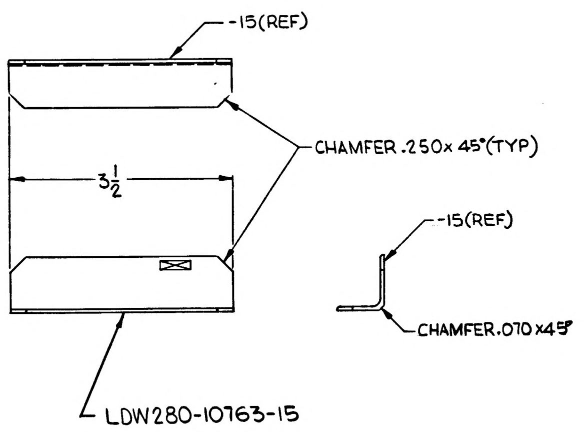
NAS 9-1100

NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS.


-11(REF)
CHAMFER .250×45°(TYP)
3
.063(REF)
-11(REF)
.125 R (REF)
.875(REF)
CHAMFER .070×45
.750(REF)
LDW280-10763-11


1/2
1/4
-17(REF)
3
CHAMFER .250×45°(TYP)
-17(REF)
CHAMFER .070×45°
LDW280-10763-17


-13(REF)
CHAMFER .250×45°(TYP)
3 5/8
-13(REF)
CHAMFER .070×45°
LDW280-10763-13


-15(REF)
CHAMFER .250× 45°(TYP)
3 1/2
-15(REF)
CHAMFER .070×45°
LDW280-10763-15

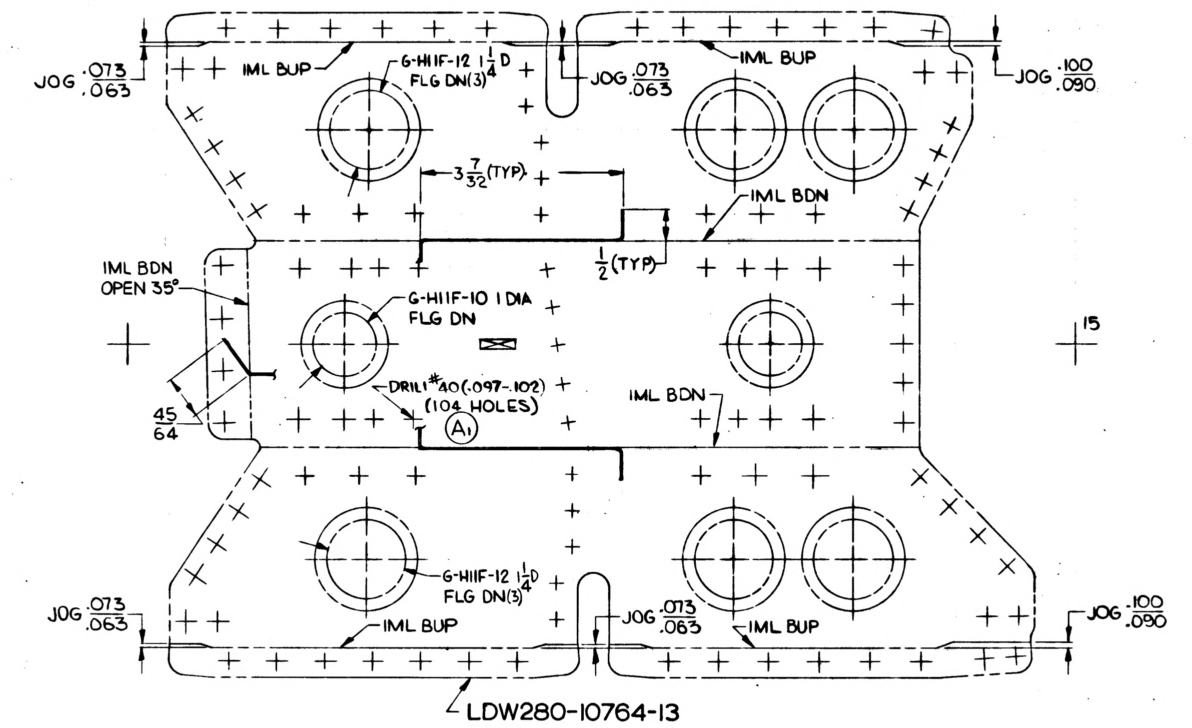
MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM MODEL OR END ITEM	SIZE D	CODE IDENT NO. 26512	LDW280-10763	
	SCALE FULL		SHEET 3.00	

LDW280-10763

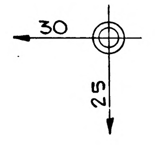
NAS 9-1100

01

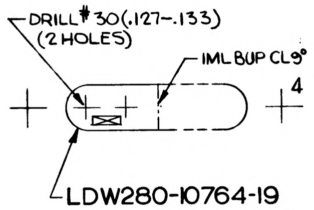

JOG .073/.063
IML BUP
G-H11F-12 1 1/4 D FLG DN(3)
JOG .073/.063
IML BUP
JOG .100/.090
3 7/32 (TYP)
IML BDN
1/2 (TYP)
IML BDN OPEN 35°
G-H11F-10 1 DIA FLG DN
DRILL #40(.097-.102) (104 HOLES)
A1
IML BDN
15
45/64
G-H11F-12 1 1/4 D FLG DN(3)
JOG .073/.063
IML BUP
JOG .073/.063
IML BUP
JOG .100/.090

LDW280-10764-13

BEND R 1/16

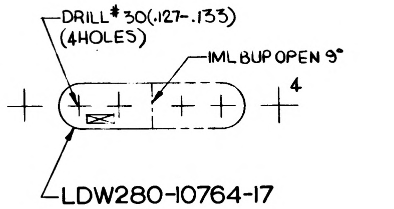


NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS.


DRILL #30(.127-.133) (2 HOLES)
IML BUP CL 9°
4

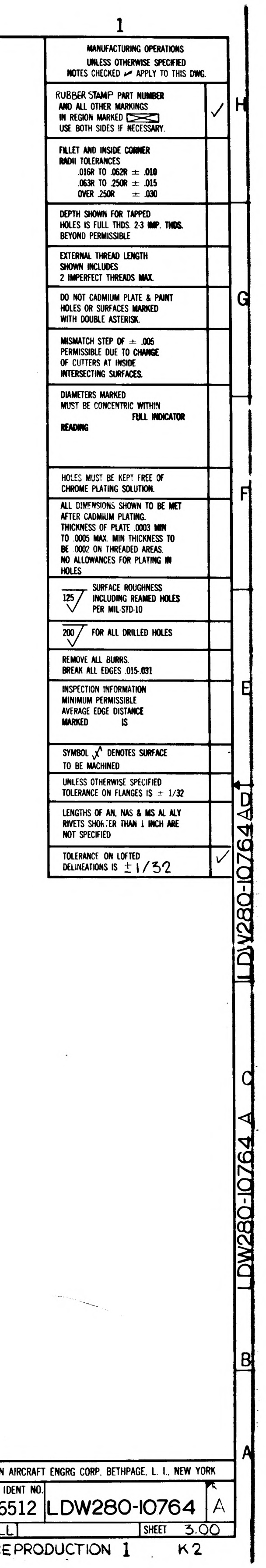
LDW280-10764-19

BEND R 3/32

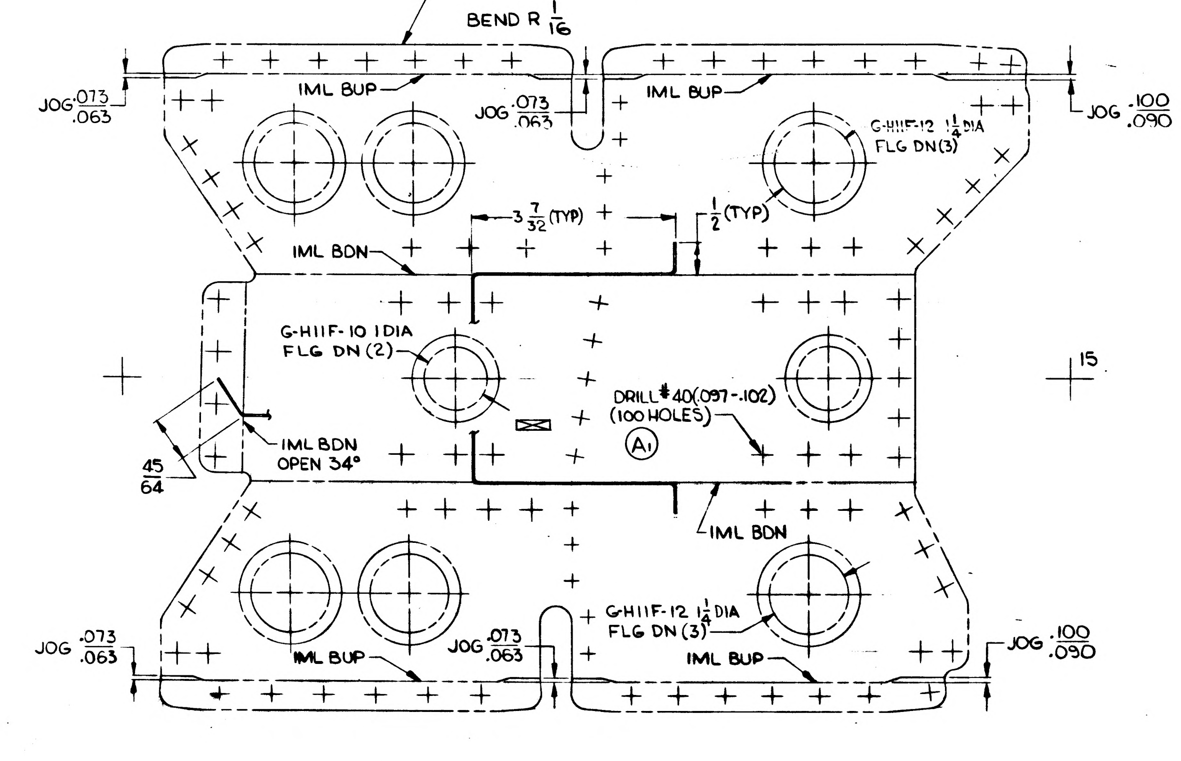

DRILL #30(.127-.133) (4 HOLES)
IML BUP OPEN 9°
4

LDW280-10764-17

BEND R 3/32

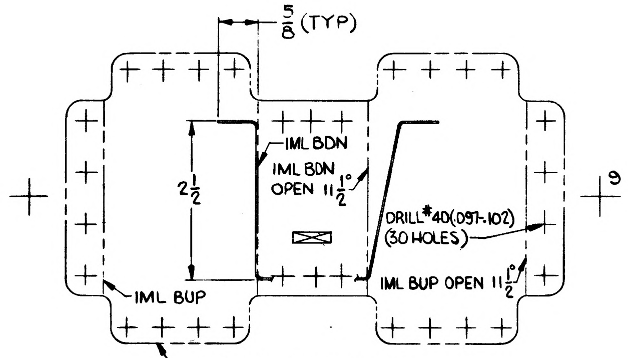


MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓


JOG .073/.063
IML BUP
JOG .073/.063
IML BUP
JOG .100/.090
G-H11F-12 1 1/4 DIA FLG DN(3)
3 7/32 (TYP)
1/2 (TYP)
IML BDN
G-H11F-10 1 DIA FLG DN (2)
DRILL #40(.097-.102) (100 HOLES)
A1
15
IML BDN OPEN 34°
45/64
IML BDN
G-H11F-12 1 1/4 DIA FLG DN (3)
JOG .073/.063
IML BUP
JOG .073/.063
IML BUP
JOG .100/.090

LDW280-10764-11

BEND R 1/16


5/8 (TYP)
IML BDN
IML BDN OPEN 11 1/2°
2 1/2
DRILL #40(.097-.102) (30 HOLES)
IML BUP
IML BUP OPEN 11 1/2°
9

LDW280-10764-15

BEND R 1/16

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK				
LEM	SIZE F	CODE IDENT NO. 26512	LDW280-10764	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

LDW280-10764 A

2 FOR PHOTO REPRODUCTION 1 K2

NAS 9-1100

PART NO. LDW280-10764-17 & -19 — GAEC SCH NO. 32-2

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28213	LTA-8(18)	4 EA
	LDW280-23213	LTA-3(13)	2 EA
		LEM-1(31)	2 EA
		LEM-2(32)	2 EA
		LEM-3(33)	2 EA
		LEM-4(34)	2 EA
		LEM-5(35)	2 EA
		LEM-6(36)	2 EA
		LEM-7(37)	2 EA
		LEM-8(38)	2 EA
		LEM-9(39)	2 EA
		LEM-10(40)	2 EA
		LEM-11(41)	2 EA
		LEM-12(42)	2 EA
		LEM-13(43)	2 EA
		LEM-14(44)	2 EA
LEM	LDW280-23213	LEM-15(45)	2 EA

PART NO. LDW280-10764-15 — GAEC SCH NO. 32-2

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28213	LTA-8(18)	2
	LDW280-23213	LTA-3(13)	2
		LEM-1(31)	2
		LEM-2(32)	2
		LEM-3(33)	2
		LEM-4(34)	2
		LEM-5(35)	2
		LEM-6(36)	2
		LEM-7(37)	2
		LEM-8(38)	2
		LEM-9(39)	2
		LEM-10(40)	2
		LEM-11(41)	2
		LEM-12(42)	2
		LEM-13(43)	2
		LEM-14(44)	2
LEM	LDW280-23213	LEM-15(45)	2

PART NO. LDW280-10764-11 & -13 — GAEC SCH NO. 32-2

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28213	LTA-8(18)	1 EA
	LDW280-23213	LTA-3(13)	1 EA
		LEM-1(31)	1 EA
		LEM-2(32)	1 EA
		LEM-3(33)	1 EA
		LEM-4(34)	1 EA
		LEM-5(35)	1 EA
		LEM-6(36)	1 EA
		LEM-7(37)	1 EA
		LEM-8(38)	1 EA
		LEM-9(39)	1 EA
		LEM-10(40)	1 EA
		LEM-11(41)	1 EA
		LEM-12(42)	1 EA
		LEM-13(43)	1 EA
		LEM-14(44)	1 EA
LEM	LDW280-23213	LEM-15(45)	1 EA

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
RFV	B	B		A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -19

GRUMMAN REL^c INFO_B

PRIM NO. 215 (LE001) MP-B 8-29-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY	V.NARONIS 1/19/66	RELIABILITY	
LAYOUT BY	J.KORYKORA 1/19		
CHECKED BY	D.FASS 2-17-66		
GR.LEADER	W. Philly 2/1/66		
VEH.DES.INT.	2/10		
STRUCTURES	FE3 GW 2-23	PROJ ENGR	Carbee 2/23
STRUCTURES	Hilderman 2/24	REL GROUP	Bott. 3-1-66
WEIGHTS	A Robinsel 2/25		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE-RCS INTERCONNECT &
CROSSFEED VALVE SUPPORT

SIZE	CODE IDENT NO.		
B	26512	LDW280-10764	B

SCALE NONE

SHEET 1.00 OF 4

ENG 77.1 9-64

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	~~DET SPEC~~	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~[illegible]~~ APPD
											REWORK	SCRAP			
A	1	1.00 1.10 3.00							SHEET 1.00 OF 4 WAS 1.00 OF 3 ADDED SHEET 1.10. REVISE HOLE PATTERN FOR -11 & -13 DRILL #40(.097-.102) (100) WAS (89) FOR -11 & (104) WAS (88) FOR -13. PLUG EXISTING HOLES USING NAS 1097 RIVET.	NOTED	-11 & -13		HERB. SCHWETER 3-24-66		
	2	1.00							Ⓡ ADDED EFFECTIVITY LTA-3(13), LEM-1(31) THRU LEM-6(36) IN MOD BLK FOR -11, -13, -17 & -19		NOT	REQD			
B	1	1.00,1.10						EO B1	IN MODEL BLOCK FOR-15 ADDED EFF LTA-3, & LEM-1 THRU LEM-6	LTA-3, LTA-8, LEM-1 THRU LEM-6	NOT	REQD	P. CARTSELOS 8-7-66		
	2								REF EO B1, LDW280-23213 WAS LDW280-23212 FOR NEXT ASSY OF-11&-13 IN MODEL BLOCK, SHOULD BE IN DESCRIPTION OF EO			RL			
	3	1.00						Ⓡ	*ADDED LEM-7 THRU LEM-15*	LEM-7 THRU LEM-15	NOT	REQD	8/24		

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10764	B
SCALE NONE		SHEET 1.10	

ENG 77.3 5-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10764-19	E	CLIP	AL ALLOY SH	QQ-A-250/12	7075	.040 x 1 1/2 x 3 5/8	T6	88	
		↕ -17	↕	CLIP	↕	↕	↕	.040 x 1 1/2 x 3 3/4	T6	88	
		-15		BRACKET				.032 x 5 1/4 x 8 5/8	T6	88	
		-13		BRACKET				.032 x 11 1/4 x 14 1/2	T6	88	
		LDW280-10764-11	E	BRACKET	AL ALLOY SH	QQ-A-250/12	7075	.032 x 11 1/4 x 14 1/2	T6	83	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10764

SCALE NONE SHEET 2.00

ENG 77.2 7-65

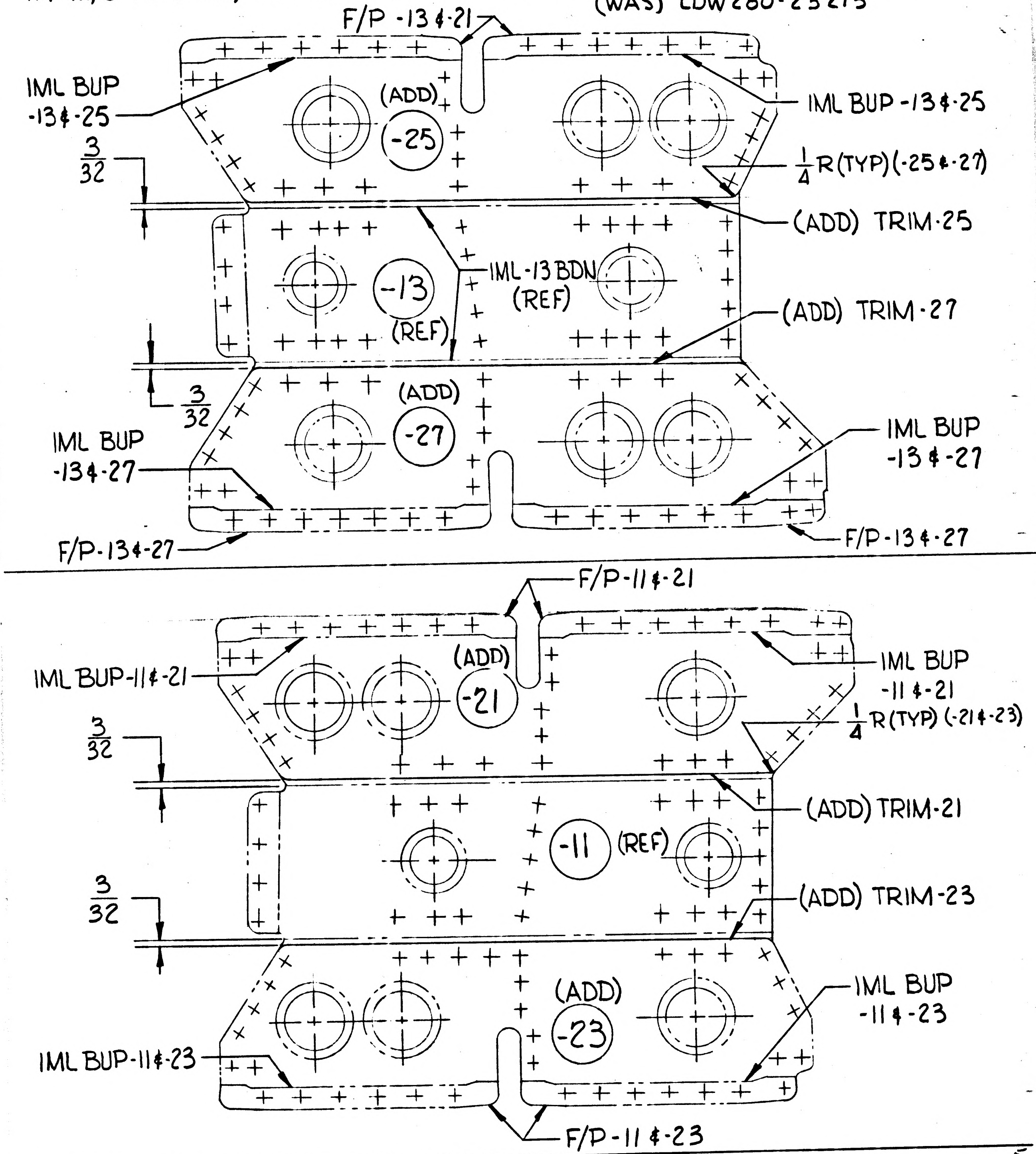
01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP. *
CODE IDENT NO. 26512
ENGINEERING ORDER
ENG 32.2 REV 3-65
A

DWG. NO. LDW280-10764	EO NO. C1
CONTROL INFO NO. LDW280A7592	

ADD -21 & -23 IDENTICAL TO -11 EXCEPT AS SHOWN & NOTED ~ 1 EACH REQ'D/MODULE
ADD -25 & -27 IDENTICAL TO -13 EXCEPT AS SHOWN & NOTED ~ 1 EACH REQ'D/MODULE
N/A FOR -21, -23, -25 & -27 IS LDW280-53213 ~ EFF: LM-3 THRU LM-15
IN M/B FOR -11 & -13 REMOVE LM-3 THRU LM-15 EFFECTIVITY.
IN M/B FOR -15, -17 & -19 N/A FOR LM-3 THRU LM-15 IS LDW280-53213
(WAS) LDW280-23213



F/P -13 & -21
IML BUP -13 & -25
IML BUP -13 & -25
(ADD)
-25
3/32
1/4 R (TYP) (-25 & -27)
(ADD) TRIM-25
IML-13 BDN (REF)
-13
(REF)
(ADD) TRIM-27
3/32
(ADD)
-27
IML BUP -13 & -27
IML BUP -13 & -27
F/P-13 & -27
F/P-13 & -27
F/P-11 & -21
IML BUP-11 & -21
IML BUP -11 & -21
(ADD)
-21
3/32
1/4 R (TYP) (-21 & -23)
(ADD) TRIM-21
-11
(REF)
3/32
(ADD) TRIM-23
(ADD)
-23
IML BUP -11 & -23
IML BUP-11 & -23
F/P-11 & -23

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 1426 or CCA 580

5

REASON FOR EO: ADDITION OF 4 R.C.S. INTERCONNECTS PER LCR 1426 CREATES NEW PARTS.

DESCRIPTION OF EO: ADDED -21, -23, -25 & -27 ~ IN M/B FOR -11 & -13 REMOVED LM-3 THRU LM-15 EFF. ~ IN M/B FOR -15, -17 & -19 REVISED N/A FOR LM-3 THRU LM-15 (WAS) LDW280-23213

GAEC EO RELEASE C
JL 7-5

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3 (33)	
		THRU	
LM		LM-15 (45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG	RECORD EO	REWORK	SCRAP
✓		✓	

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
APPROVED BY				FDR	RH			Botta
DATE	7/1/67			7/1/67	7/1		7/1/67	7-5-67

PRIORITY: C
DRAWING TITLE: BRACKET - ASCENT STAGE, MID-SECT. - RCS INTER & CROSS FEED SUPT.
DRAWING NO.: LDW280-10764
EO NO.: C1

ISSUED BY D. KLINGENER X1392 SECTION VDI GROUP NO. 335 PL 25

01
NAS 9-1100

ENG 32.2 REV 3-65

A

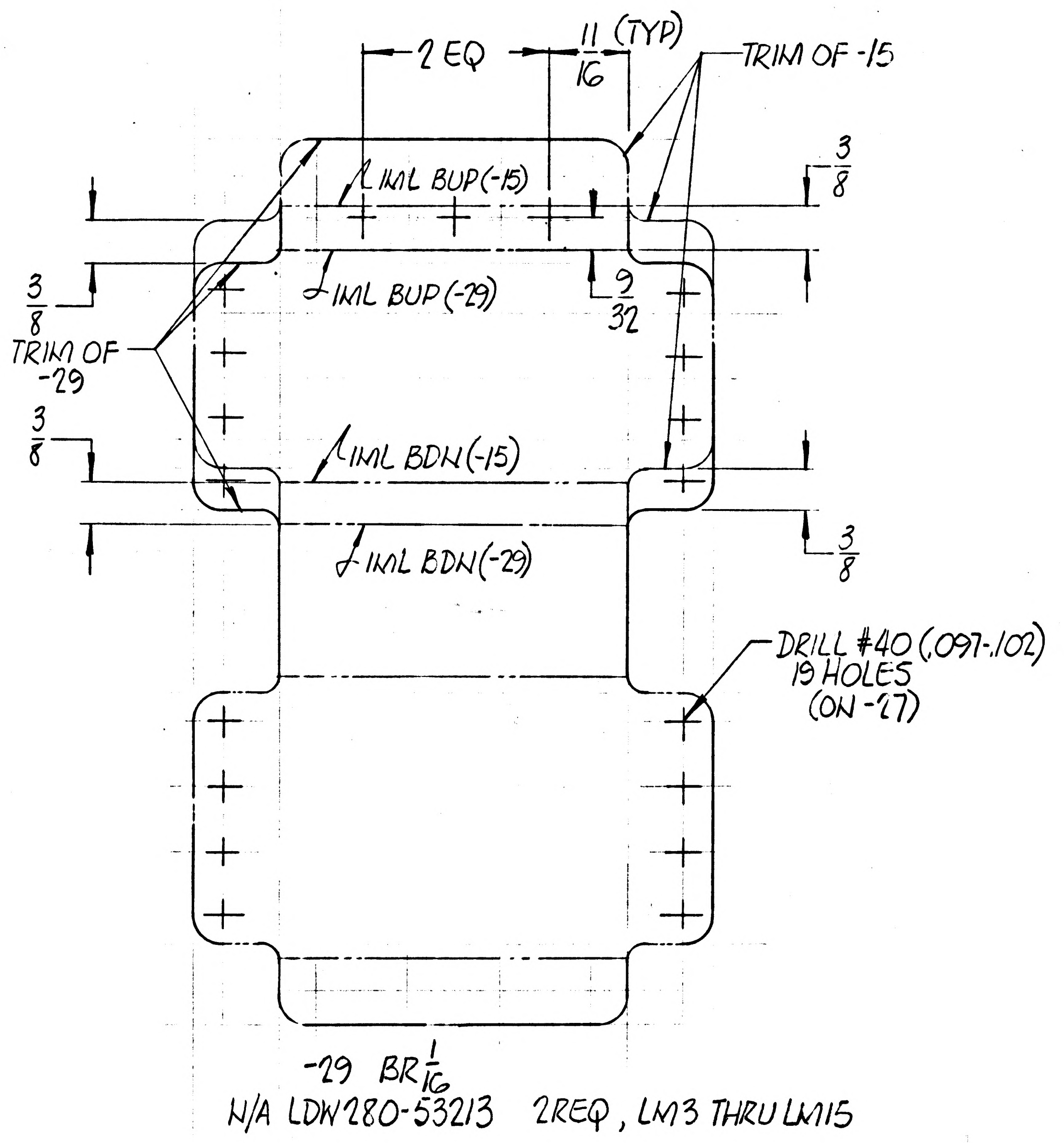
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

*

DWG. NO.	LDW280-10764	EO NO.	C2
CONTROL INFO NO.	LDW280A-8367		

ADD -29, SAME AS -15 EXCEPT AS SHOWN:-

REMOVE LM 3 THRU LM 15 EFF. FROM -15.



2 EQ
11/16 (TYP)
TRIM OF -15
3/8
℄ IML BUP (-15)
℄ IML BUP (-29)
9/32
3/8
TRIM OF -29
3/8
℄ IML BDN (-15)
℄ IML BDN (-29)
3/8
DRILL #40 (.097-.102) 19 HOLES (ON -27)

-29 BR 1/16
N/A LDW280-53213 2REQ, LM3 THRU LM15

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	✓	LCD 1426, CCA 580	5

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
TO ACCOMMODATE RCS INTERCONNECTS	ADDED -29. REMOVED FROM -15, LM3 THRU LM15.	C JL 8/4/7

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
		EFFECTIVITY	
LM		LM3 (33) THRU LM15 (45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
✓			-15	DATE	8/3/67			8-3-67	8-3		8/3/67	8-3-67
REVISE DWG	RECORD EO	REWORK	SCRAP		VDI.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	BRACKET A/S, M/S RCS INTER. & CROSS FEED SUPPORT	LDW280-10764	C2

ISSUED BY SALVADOR X7033 SECTION VDI GROUP NO. 335 PL 25

01
NAS 9-1100

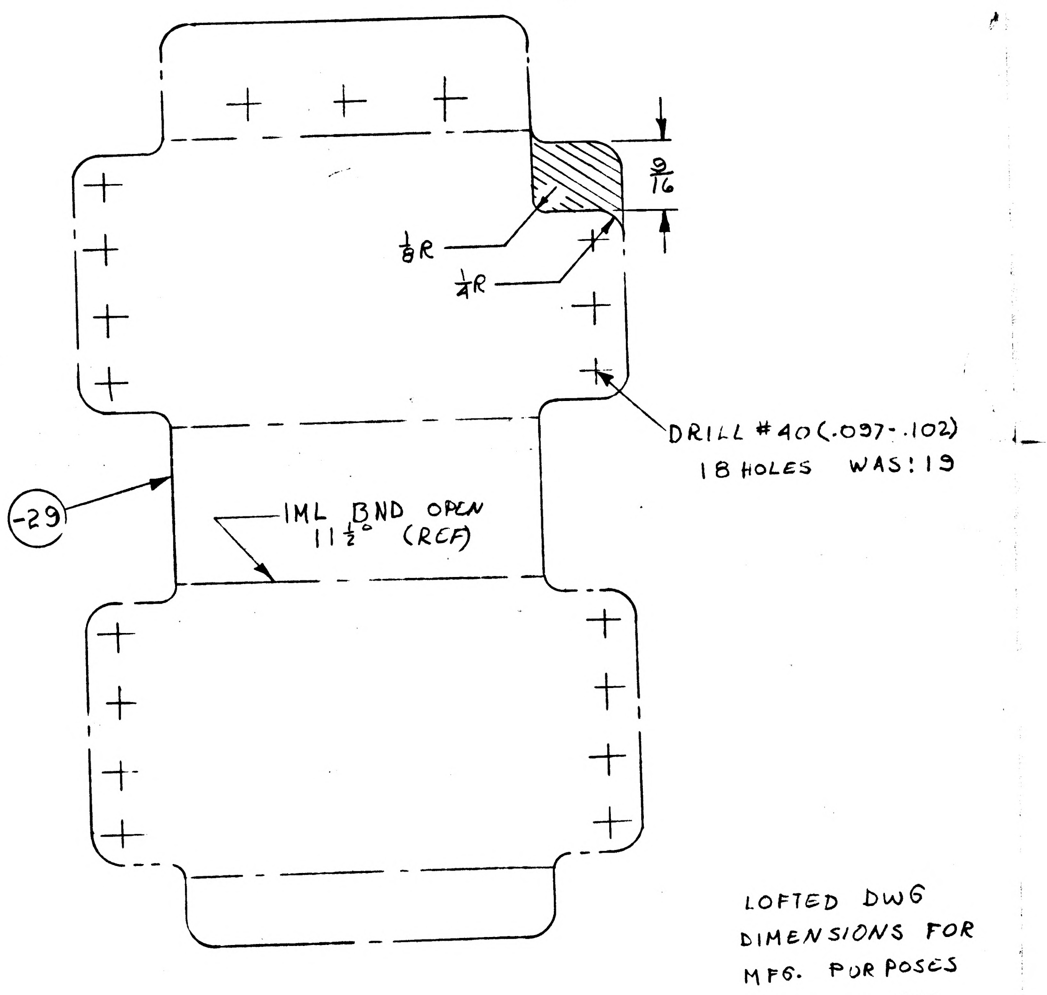
ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10764
EO NO. C3
CONTROL INFO NO. LM-5-16029

IN FLD/DWG & B/M
TRIM SHADED AREA
OF -29
(REF EO C2)

RELEASED BY LIAISON



LOFTED DWG
DIMENSIONS FOR
MFG. PURPOSES
ONLY. DO NOT
INCLUDE ON DWG.

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG	

REASON FOR EO: TO FACILITATE ASSY OF FASTENERS

DESCRIPTION OF EO: IN FLD/DWG & B/M TRIMMED -29

GAEC EO RELEASE: C

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LEM-3 (33)	
		THRU	
		LEM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK ✓ SCRAP

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY								
DATE	8/23/67				8-13-67	8-18-67	8/23/67	8/19/67
8/17/67	VDI							

PRIORITY: C
DRAWING TITLE: BRACKET A/S M-S RCS INTER & CROSS FEED SUPPORT
DRAWING NO. LDW280-10764
EO NO. C3

ISSUED BY LIAISON P. HUSTED / K.L. 86755 SECTION VDI GROUP NO. 335 PL 25

01
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 832
CONTROL INFO NO. LDW 280B-0904

ENG 32.2 REV 3-65

FOR THE FOLLOWING DWGS; FOR DASH No. NOTED *
ADD EFF.: LFM-50 & PA-1(47) & NEXT ASSY: LTM 280-26968
(* USE APPLICABLE DASH No. IN DESCRIPTION OF E.O.)

DRAWING No.	DASH No.	No. REQ'D	CHG. No.
LDW280-10764	-17, -19 -29 -21, -23, -25, -27	2 EA. 1 EA.	C4
-10765	-15 -16 -17 -18 -31, -32, -33, -34	1 EA.	C3
-10766	-19	4 EA.	B4
-10954	-11, -12	1 EA.	A4
-11885	-11, -13, -14 -15 -17, -19	1 EA	A2
-11886	-13, -16, -17, -19 -21, -23, -25	1 EA.	A2
-11896	-11, -13, -14, -17, -18 -19, -23, -27, -31	1 EA.	B1
-11897	-11, -13, -15, -17, -19	1 EA.	A1
-11898	-13, -19, -31, -33, -35 -17	1 EA 4 EA	A5
-11899	-11, -13, -15 -17, -23, -25	1 EA.	A3
-11900	-11, -13, -15 -17, -19, -21	1 EA	A1
-11901	-11, -16, -17, -19 -21, -23, -25	1 EA.	A4
-11902	-11, -13, -15	1 EA.	A1
-11903	-19, -20, -21, -22 -23, -24, -25	1 EA.	A6
	-27	2 EA.	
LDW 280-11934	-11, -13, -15, -17 -18, -19, -21, -22	1 EA.	A1

LFM

01

NAS 9-1100

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD # 2019 CCA 667

(5)

REASON FOR EO: UPDATE PA-1(47) TO LM-3(33) CONFIG.

DESCRIPTION OF EO: FOR * ADDED PA-1(47) EFF.

GAEC EO RELEASE: 1/10

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM #50 EI	PA-1 (47)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQ (REWORK / SCRAP)

	APPROVED BY								
DATE	1/8/68			1-8-68	1-9		1/8/68	1-10-68	
—	YDI	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONF~~	

PRIORITY: C

DRAWING TITLE: NOTED ABOVE

DRAWING NO.: LEO 280

EO NO.: 832

1-9

ISSUED BY D. LOZINSKI X7C33 SECTION Y.D.I. GROUP NO. 335 PL 25

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23213	LEM-2(32)	1EA
	LDW280-23213	LEM-1(31)	1EA
	LDW280-23213	LTA-3(13)	1EA
LEM	LDW280-28213	LTA-8(18)	1EA

LDW280-10765-19&-20

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23213	LEM-15(45)	1EA
		LEM-14(44)	
		LEM-13(43)	
		LEM-12(42)	
		LEM-11(41)	
		LEM-10(40)	
		LEM-9(39)	
		LEM-8(38)	
		LEM-7(37)	
		LEM-6(36)	
		LEM-5(35)	
		LEM-4(34)	
LEM	LDW280-23213	LEM-3(33)	1EA

PART NO. LDW280-10765-31&-32 GAEC SCH NO. 32-2

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28213	LTA-8(18)	2

LDW280-10765-11

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23213	LEM-15(45)	1EA
		LEM-14(44)	1EA
		LEM-13(43)	1EA
		LEM-12(42)	1EA
		LEM-11(41)	1EA
		LEM-10(40)	1EA
		LEM-9(39)	1EA
		LEM-8(38)	1EA
		LEM-7(37)	1EA
		LTA-3(13)	1EA.
		LEM-6(36)	1EA
		LEM-5(35)	1EA
		LEM-4(34)	1EA
		LEM-3(33)	1EA
		LEM-2(32	1EA
	LDW280-23213	LEM-1(31)	1EA
LEM	LDW280-28213	LTA-8(18)	1EA

PART NO. LDW280-10765-15,-16,-17&-18 GAEC SCH NO. 32-2

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23213	LEM-15(45)	2EA
		LEM-14(44)	
		LEM-13(43)	
		LEM-12(42)	
		LEM-11(41)	
		LEM-10(40)	
		LEM-9(39)	
		LEM-8(38)	
		LEM-7(37)	
		LTA-3(13)	
		LEM-6(36)	
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
	LDW280-23213	LEM-1(31)	
LEM	LDW280-28213	LTA-8(18)	2EA

PART NO. LDW280-10765-13&-14 GAEC SCH NO. 32-2

(3)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.0	2.00	3.00						
REV	B	B	B	B						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED

LAST DASH NO. USED -32

GRUMMAN REL INFO

PRIM NO.			EMF
215	MP-14	8-10-78-6	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-110C

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY V.NARONIS 1/20/66

LAYOUT BY J.KORYKORA 2/11/66

CHECKED BY EG 2-17-66

GR.LEADER R.V.PHILLIPS 2-15

VEH.DES.INT. 2/23

STRUCTURES 2-22

STRUCTURES Alderman 2-28

WEIGHTS 3-1

PROJ ENGR 3-7-66

REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE-MID SECT. RCS INTERCONNECT
& CROSSFEED VALVE SUPPORT

SIZE B

CODE IDENT NO. 26512

LDW280-10765 B

SCALE NONE

SHEET 1.00 OF 4

ENG 77 1 9-64

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
A	1	1, 1.10 & 3.00	C2 C3 C4					EO A1	IN F/D ON -15 & -16, REMOVED SECT B-B; ADDED REF PT Z; ADDED DIAG. LINE FROM PT C TO PT Z; IN MOD/BLK ON -15, -16, -17 & -18, ADDED EFF. FOR LEM-1 THRU LEM-6, & LTA-3, N/A LDW 280-23213, 1 EA REQD. ADDED SH. 1.10 SH1OF4 WAS 1OF3	LTA-8 LTA-3 & LEM-1 THRU LEM-6	✓		R. PRINZIVALLI 5-11-66		
	2	1.10 & 3.00	C5					EO A2	ON -15, -16, 3 5/16 WAS 3 7/32	LTA-3, LTA-8 LEM-1 THRU LEM-3					
	3	1.00, 1.10						EO A3	IN M/B FOR -13 & -14 ADDED LEM-1 (31) THRU LEM-6 (36) & LTA-3(13) EFF. N/A LDW280-23213, 2 REQD PER MODULE	LEM-1 THRU -6, LTA-3	NOT	REQD			
	4	1.00, 1.10							REF EO A2 EFF. SHOULD INCLUDE LEM-4, LEM-5 & LEM-6	LEM-4, -5, -6			LB		
B	1	1.00, 1.10, 3.00	B6					EO B1	-13, -14, REMOVED (2) # 40 HOLES	LTA-8, LTA-3, LEM-1 THRU LEM-6	✓	WW	R. SCHUCK 9-10-66		
	2	1, 1.10, 2, 3	3A+B					EO B2	IN FLD, B/M, & MOD/BLK ADDED -19 & -20.	LTA-3 LEM-1 THRU LEM-6	NOT	REQ'D	GARY KORDES 9-21-66		
	3	1., 1.10, 2., 3	3A					EO B3	CREATED -31 & -32 ~ RESTRICTED -19 & -20	LTA-3 & 8, LEM-1 THRU -6		✓	C. DAVELLA 10-21-66		
	4	1., 1.10.						EO B4	FOR -13, -14, -15, -16, -17, -18, -31 & -32 ADDED LEM-7 THRU LEM-15 EFF.	LEM-7 THRU -15	NOT	REQD			
	5	1. & 1.10							REF EOB3 S/B "... AND ADDED EFF. LTA-8 N/A LDW280-28213 TO -19 & -20"	LTA-8	NOT	REQD FH			

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10765	B
SCALE NONE		SHEET 1.10	

FOR CONTINUATION OF REVISIONS SEE SHEET ______

NG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10765-32	E	CLIP	AL ALLOY SH	QQ-A-250/12	7075	.040X2 3/8X 2 3/4	T6	88	
		LDW280-10765-31	E	CLIP	AL ALLOY SH	QQ-A-250/12	7075	.040X2 3/8X2 3/4	T6	88	
		LDW280-10765-20	E	CLIP	AL ALLOY SH	QQ-A-250/12	7075	.040×2 3/8×2 3/4	T6	88	
		LDW280-10765-19	E	CLIP	AL ALLOY SH	QQ-A-250/12	7075	.040×2 3/8×2 3/4	T6	88	
		LDW280-10765-18	E	BRACKET	AL ALLOY SH	QQ-A-250/12	7075	.032×4 1/4× 6 1/8	T6	88	
		LDW280-10765-17	E	BRACKET	AL ALLOY SH	QQ-A-250/12	7075	.032×4 1/4×6 1/8	T6	88	
		LDW280-10765-16	E	BRACKET	AL ALLOY SH	QQ-A-250/12	7075	.032×5 ×6 1/8	T6	88	
		LDW280-10765-15	E	BRACKET	AL ALLOY SH	QQ-A-250/12	7075	.032×5 × 6 1/8	T6	88	
		LDW280-10765-14	E	CHANNEL	AL ALLOY SH	QQ-A-250/12	7075	.032×4 1/8×4 1/2	T6	88	
		LDW280-10765-13	E	CHANNEL	AL ALLOY SH	QQ-A-250/12	7075	.032×4 1/8×4 1/2	T6	88	
		LDW280-10765-11	E	BRACKET	AL ALLOY SH	QQ-A-250/12	7075	.040×4 1/4×4 1/4	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T6	AL HEAT TREAT	MIL-H-6088

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

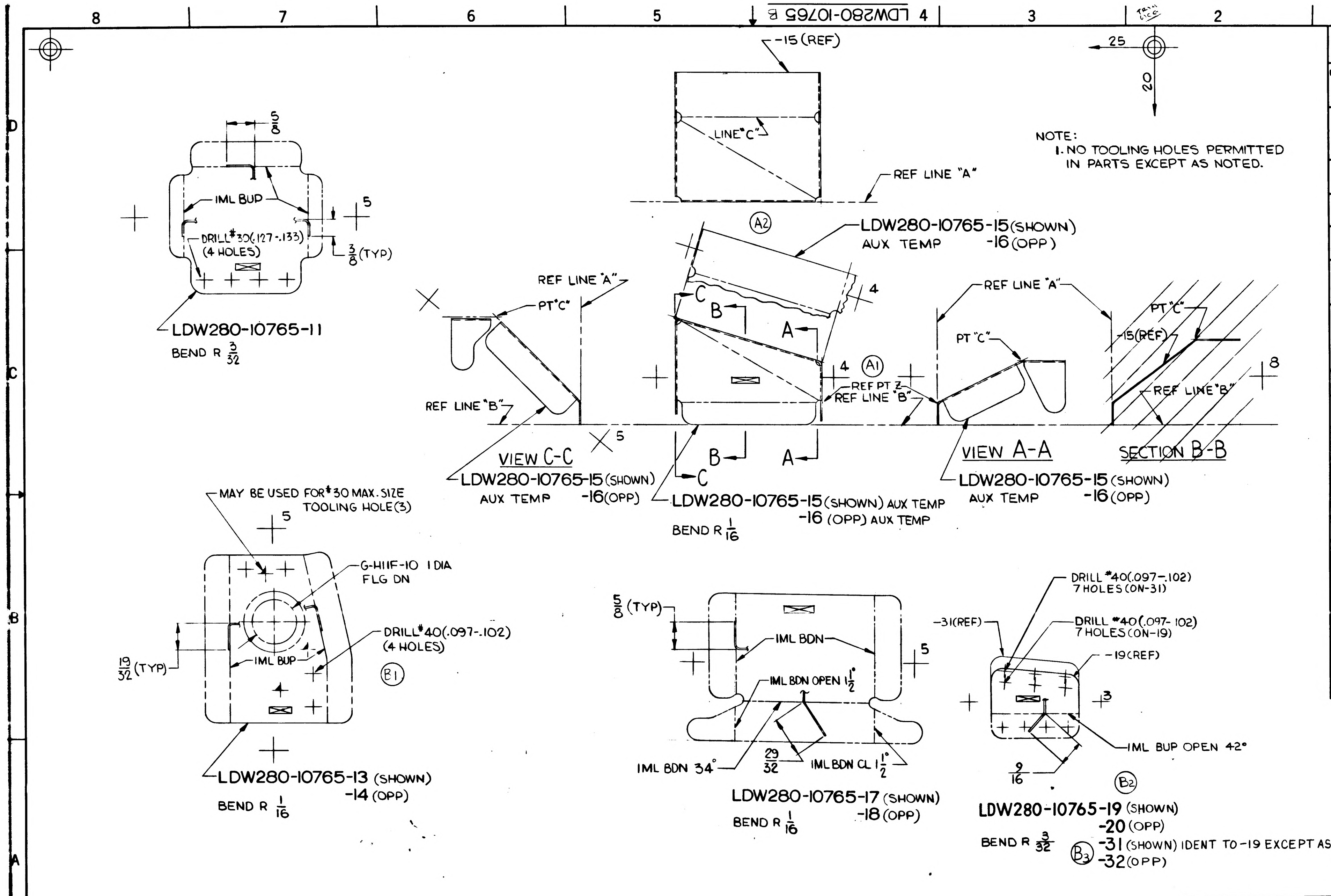
SIZE	CODE IDENT NO.		
B	26512	LDW280-10765	B
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

LDW280-10765 B



-15 (REF)
LINE "C"
REF LINE "A"
25
20
5/8
IML BUP
5
DRILL #30 (.127-.133) (4 HOLES)
3/8 (TYP)
LDW280-10765-11
BEND R 3/32
A2
LDW280-10765-15 (SHOWN)
AUX TEMP -16 (OPP)
4
REF LINE "A"
PT "C"
C
B
A
4
A1
REF PT Z
REF LINE "B"
REF LINE "B"
PT "C"
REF LINE "A"
PT "C"
-15 (REF)
REF LINE "B"
8
VIEW C-C
5
B
A
C
VIEW A-A
SECTION B-B
LDW280-10765-15 (SHOWN)
AUX TEMP -16 (OPP)
LDW280-10765-15 (SHOWN) AUX TEMP
-16 (OPP) AUX TEMP
BEND R 1/16
LDW280-10765-15 (SHOWN)
AUX TEMP -16 (OPP)
MAY BE USED FOR #30 MAX. SIZE TOOLING HOLE (3)
5
G-H11F-10 1 DIA FLG DN
DRILL #40 (.097-.102) (4 HOLES)
19/32 (TYP)
IML BUP
E1
LDW280-10765-13 (SHOWN)
-14 (OPP)
BEND R 1/16
5/8 (TYP)
IML BDN
IML BDN OPEN 1 1/2°
5
IML BDN 34°
29/32
IML BDN CL 1 1/2°
LDW280-10765-17 (SHOWN)
-18 (OPP)
BEND R 1/16
DRILL #40 (.097-.102) 7 HOLES (ON-31)
-31 (REF)
DRILL #40 (.097-.102) 7 HOLES (ON-19)
-19 (REF)
3
IML BUP OPEN 42°
9/16
B2
LDW280-10765-19 (SHOWN)
-20 (OPP)
BEND R 3/32
B3
-31 (SHOWN) IDENT TO -19 EXCEPT AS SHOWN
-32 (OPP)

NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS EXCEPT AS NOTED.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-10765

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-10765	B
	SCALE FULL			SHEET 3.00

FOR PHOTO REPRODUCTION K2

01 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10765
EO NO. C1
CONTROL INFO NO. LDW280A7593

DESCRIPTION OF EO:

IN MODEL BLOCK FOR -13 & -14, NEXT ASSY LDW280-53213 FOR LM-3 THRU LM-15 WAS LDW280-23213 & 1EACH REQD PER MODULE WAS 2EACH FOR LM-3 THRU LM-15.

IN MODEL BLOCK FOR -15, -16, -17, -18, -31 & -32, NEXT ASSY LDW280-53213 FOR LM-3 THRU LM-15 WAS LDW280-23213.

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD1426 CCA580 5

REASON FOR EO: ADDITION OF (4) RCS INTER-CONNECTS LCR 1426

DESCRIPTION OF EO: NOTED ABOVE

GAEC EO RELEASE: C JL 7-3-67

MODEL	EFFECTIVITY PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3(33)	
		THRU	
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQD (REWORK / SCRAP)

APPROVED BY				GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
		SUPPORT	RELIAB. GROUP	FDR	RH			Both
DATE 7/1/67	VD1			7/1/67	7/1		7/1/67	7-3-67

PRIORITY: C
DRAWING TITLE: BRACKET ~ A/S ~ M/S ~ RCS INTERCONNECT & CROSSFEED VALVE
DRAWING NO.: LDW280-10765
EO NO.: C1

ISSUED BY ART WILSON 6/30/67 X7033 SECTION VD1 GROUP NO. 335 PL 25

Q1 NAS 9-1100

ENG 32.1 REV 3-65

Ⓐ

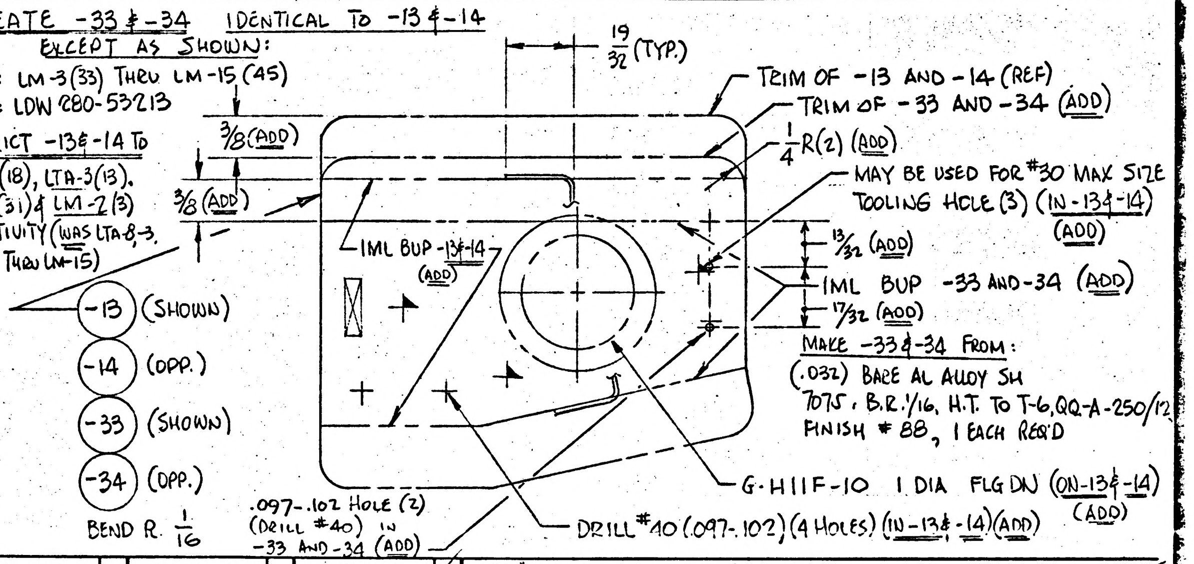
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW 280-10765 | EO NO. C2
CONTROL INFO NO. LDW 280A-8366

CREATE -33 & -34 IDENTICAL TO -13 & -14
EXCEPT AS SHOWN:

EFF: LM-3 (33) THRU LM-15 (45)
N/A: LDW 280-53213

RESTRICT -13 & -14 TO
LTA-8 (18), LTA-3 (13),
LM-1 (31) & LM-2 (3)
EFFECTIVITY (WAS LTA-8-3,
& LM-1 THRU LM-15)



19/32 (TYP.)
TRIM OF -13 AND -14 (REF)
TRIM OF -33 AND -34 (ADD)
1/4 R (2) (ADD)
MAY BE USED FOR #30 MAX SIZE TOOLING HOLE (3) (IN -13 & -14) (ADD)
3/8 (ADD)
3/8 (ADD)
IML BUP -13 & -14 (ADD)
13/32 (ADD)
IML BUP -33 AND -34 (ADD)
17/32 (ADD)
-13 (SHOWN)
-14 (OPP.)
-33 (SHOWN)
-34 (OPP.)
BEND R. 1/16
.097-.102 HOLE (2) (DRILL #40) IN -33 AND -34 (ADD)
G-H11F-10 1 DIA FLG DN (ON -13 & -14) (ADD)
DRILL #40 (.097-.102) (4 HOLES) (IN -13 & -14) (ADD)

MAKE -33 & -34 FROM:
(.032) BARE AL ALLOY SH
7075, B.R. 1/16, H.T. TO T-6, QQ-A-250/12
FINISH # 88, 1 EACH REQ'D

DETAIL SPEC REQ ☐ | CL II ENGRG CHG ☐ | CL I ENGRG CHG ☑ | LCD# 1426 OK CCA 580 5

REASON FOR EO: TO ACCOMMODATE RCS INTERCONNECTS

DESCRIPTION OF EO:
CREATED -33 & -34
REMOVED LM-3 THRU LM-15 FROM -13 & -14

GAEC EO RELEASE: JK 9/1/67

MODEL	~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	~~SUB. CONTR. UNIT NO.~~
LM	LM-3 (33)	THRU LM-15	(45)

DRAWING CHANGE REQD: REVISE DWG ☐ RECORD EO ✓
DISPOSITION OF PARTS: REWORK ☐ SCRAP ☐

	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY	JJF			JDK	SN		9/1/67	
DATE	8/3/67			8-3-67	8-3			8/3/67

PRIORITY: C
DRAWING TITLE: BRACKET- A/S, M/S, RCS INTERCONNECT & CROSSFEED VALVE SUPPORT
DRAWING NO.: LDW 280-10765
EO NO.: C2

ISSUED BY Geo. W. Rocklein x 7033 8/3/67 SECTION Veh. Des. Int. GROUP NO. 335 PL 25

335

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 832
CONTROL INFO NO. LDW 280B-0904

FOR THE FOLLOWING DWGS; FOR DASH No. NOTED *
ADD EFF.: LFM-50 & PA-1(47) & NEXT ASSY: LTM280-26968
(* USE APPLICABLE DASH No. IN DESCRIPTION OF E.O.)

DRAWING No.	DASH No.	No. REQ'D	CHG. No.
LDW280-10764	-17, -19 -29 -21, -23, -25, -27	2 EA. 1 EA.	C4
-10765	-15, -16 -17 -18 -31, -32, -33, -34	1 EA.	C3
-10766	-19	4 EA.	B4
-10954	-11, -12	1 EA.	A4
-11885	-11, -13, -14 -15 -17, -19	1 EA	A2
-11886	-13, -16, -17, -19 -21, -23, -25	1 EA.	A2
-11396	-11, -13, -14, -17, -18 -19, -23, -27, -31	1 EA.	B1
-11897	-11, -13, -15, -17, -19	1 EA.	A1
-11898	-13, -19, -31, -33, -35 -17	1 EA 4 EA	A5
-11899	-11, -13, -15 -17, -23, -25	1 EA.	A3
-11900	-11, -13, -15 -17, -19, -21	1 EA	A1
-11901	-11, -16, -17, -19 -21, -23, -25	1 EA.	A4
-11902	-11, -13, -15	1 EA.	A1
-11903	-19, -20, -21, -22 -23, -24, -25	1 EA.	A6
	-27	2 EA.	
LDW 280-11934	-11, -13, -15, -17 -18, -19, -21, -22	1 EA.	A1

LFM

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD # 2019 CCA 667

(5)

REASON FOR EO: UPDATE PA-1(47) TO LM-3(33) CONFIG.

DESCRIPTION OF EO: FOR * ADDED PA-1 (47) EFF.

GAEC EO RELEASE: 1/10/68

MODEL	EFFECTIVITY ~~PROCURING ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM #50	PA-1 (47)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK NOT SCRAP REQ

APPROVED BY								
DATE	1/8/68			1-8-68	1-9		1/8/68	1-10-68
—	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONF~~

PRIORITY: C
DRAWING TITLE: NOTED ABOVE
DRAWING NO.: LEO 280
EO NO.: 832

1-9
ISSUED BY D. LOZINSKI X7033 SECTION V.D.I. GROUP NO. 335 PL 25

01 NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23213	LEM-6(36)	2
LEM	LDW280-23213	LEM-5(35)	2
LEM	LDW280-23213	LEM-4(34)	2
LEM	LDW280-23213	LEM-3(33)	2
LEM	LDW280-23213	LEM-2(32)	2
LEM	LDW280-23213	LEM-1(31)	2
LEM	LDW280-23213	LTA-3(13)	2
LEM	LDW280-28213	LTA-8(18)	2
PART NO. LDW280-10766-15		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23213	LEM-6(36)	1 EA
LEM	LDW280-23213	LEM-5(35)	1 EA
LEM	LDW280-23213	LEM-4(34)	1 EA
LEM	LDW280-23213	LEM-3(33)	1 EA
LEM	LDW280-23213	LEM-2(32)	1 EA
LEM	LDW280-23213	LEM-1(31)	1 EA
LEM	LDW280-23213	LTA-3(13)	1 EA
LEM	LDW280-28213	LTA-8(18)	1 EA
PART NO. LDW280-10766-13 & -17		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23213	LEM-6(36)	4
LEM	LDW280-23213	LEM-5(35)	4
LEM	LDW280-23213	LEM-4(34)	4
LEM	LDW280-23213	LEM-3(33)	4
LEM	LDW280-23213	LEM-2(32)	4
LEM	LDW280-23213	LEM-1(31)	4
LEM	LDW280-23213	LTA-3(13)	4
LEM	LDW280-28213	LTA-8(13)	4
PART NO. LDW280-10766-11		GAEC SCH NO. 32-4	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A							
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A			
LAST DASH NO. USED	-17	PRIM NO.	VE(001)		
		215	PP12		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
± 1/32 ± .020 ± 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9 -1100 | LINE ITEM 1 | DOCUMENTATION TYPE II

DRAWN BY	GENTILE 1·4·66	~~RELIABILITY~~	
LAYOUT BY	KORYKORA 11/19/65		
CHECKED BY	1-10-66		
GRP. LEADER	1/21/66		
VEH. DES. INT.	1/22/66		
STRUCTRUES	FJB	PROJ ENGR	3/26
STRUCTRUES	Wilderman 2-19	REL GROUP	Bott 3-1-66
WEIGHTS	2-21		

2

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE-RCS INTERCONNECT &
CROSS FEED VALVE SUPPORT

SIZE	CODE IDENT NO.		
B	26512	LDW280-10766	A
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 9-64

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23213	LEM-6(36)	2
LEM	LDW280-23213	LEM-5(35)	2
LEM	LDW280-23213	LEM-4(34)	2
LEM	LDW280-23213	LEM-3(33)	2
LEM	LDW280-23213	LEM-2(32)	2
LEM	LDW280-23213	LEM-1(31)	2
LEM	LDW280-23213	LTA-3(13)	2
LEM	LDW280-28213	LTA-8(18)	2
PART NO. LDW280-10766-15		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23213	LEM-6(36)	1 EA
LEM	LDW280-23213	LEM-5(35)	1 EA
LEM	LDW280-23213	LEM-4(34)	1 EA
LEM	LDW280-23213	LEM-3(33)	1 EA
LEM	LDW280-23213	LEM-2(32)	1 EA
LEM	LDW280-23213	LEM-1(31)	1 EA
LEM	LDW280-23213	LTA-3(13)	1 EA
LEM	LDW280-28213	LTA-8(18)	1 EA
PART NO. LDW280-10766-13&-17		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23213	LEM-6(36)	4
LEM	LDW280-23213	LEM-5(35)	4
LEM	LDW280-23213	LEM-4(34)	4
LEM	DW280-23213	LEM-3(33)	4
LEM	LDW280-23213	LEM-2(32)	4
LEM	LDW280-23213	LEM-1(31)	4
LEM	LDW280-23213	LTA-3(13)	4
LEM	LDW280-28213	LTA-8(18)	4
PART NO. LDW280-10766-11		GAEC SCH NO. 32-4	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A							
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-17

GRUMMAN REL INFO A

PRIM NO.	VE(001)		
215	PP12		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100 | LINE ITEM 1 | DOCUMENTATION TYPE II

DRAWN BY	GENTILE 1·4·66	~~RELIABILITY~~	
LAYOUT BY	KORYKORA 11/19/65		
CHECKED BY	1-10-66		
GRP. LEADER	1/21/66		
VEH. DES. INT	1/22/66		
STRUCTRUES	F.B.	PROJ ENGR	2/26
STRUCTRUES	Wilderman 2-19	REL GROUP	Botti 3-1-66
WEIGHTS	2-2-1		

2

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE-RCS·INTERCONNECT &
CROSS FEED VALVE SUPPORT

SIZE	CODE IDENT NO.		
B	26512	LDW280-10766	A
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 9-64

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00 & 1.10						EO A1	ON-11,-13,-17,-15 ADDED LTA-3(13), LEM-1(31) THRU LEM-6(36) N/A LDW280-23213 EFFECTIVITY SH 1 OF 4 WAS SH 1 OF 3, ADDED SH 1.10.	LTA-3, LEM-1 THRU LEM-6	NOT	REQD	A BEERS 7-12-66	☒	☒

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY
A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10766	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10766-17	E	ANGLE	AL ALLOY EXTR	QQ-A-200/11	7075 T6 511	AND10134-0702×3 1/8	NONE	88	
								LDW280-10766-15	E	↕	↕	↕	↕	AND10134-0702×3 1/8	NONE	88	
								LDW280-10766-13	E	↕	↕	↕	↕	AND10134-0702×3 1/2	NONE	88	
								LDW280-10766-11	E	ANGLE	AL ALLOY EXTR	QQ-A-200/11	7075 T6 511	AND10134-0702×1 7/8	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10766

SCALE NONE

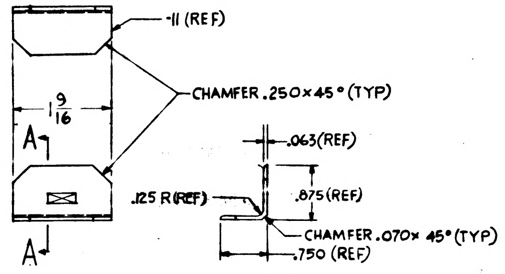
SHEET 2.00

ENG 77.2 7-65

01

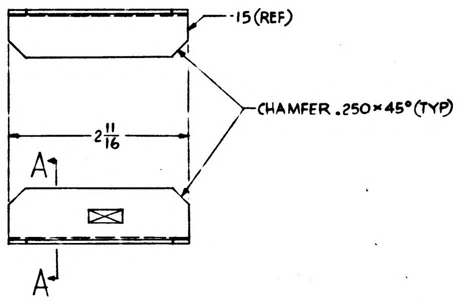
NAS 9-1100

NOTE:
NO TOOLING HOLES PERMITTED IN PARTS

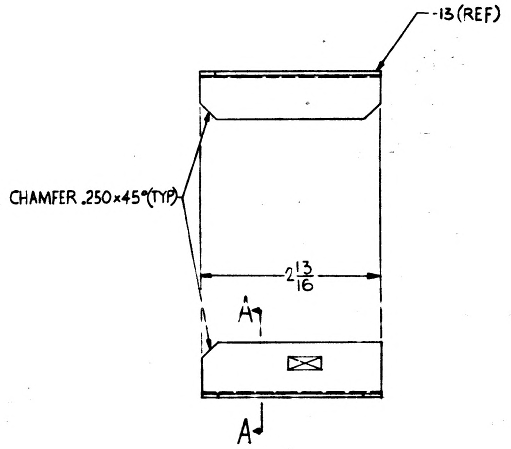

-11 (REF)
CHAMFER .250×45° (TYP)
1 9/16
A
A
.063 (REF)
.125 R (REF)
.875 (REF)
CHAMFER .070× 45° (TYP)
.750 (REF)

LDW280-10766-11

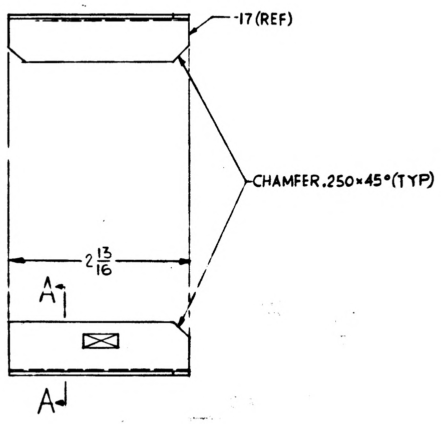
SECT. AA
FOR -11, -13, -15, & -17


-15 (REF)
CHAMFER .250×45° (TYP)
2 11/16
A
A

LDW280-10766-15


-13 (REF)
CHAMFER .250×45° (TYP)
2 13/16
A
A

LDW280-10766-13


-17 (REF)
CHAMFER .250×45° (TYP)
2 13/16
A
A

LDW280-10766-17

Q1

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

LEM
MODEL OR END ITEM

SIZE D
CODE IDENT NO. 26512
LDW280-10766

SCALE FULL
SHEET 3.00

22

GRUMMAN AIRCRAFT ENGINEERING CO.
CODE IDENT NO. 26512
ENGINEERING ORDER

NO LE0280 | ED NO. 294
CONTROL INFO NO. LDW280A0656

GHO 30.3 REV 3-65

*TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4 34

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10719	A1	SEE DRAWING
-10720	A1	↑
-10723	B1	
-10724	A1	
-10726	B1	
-10727	A1	
-10739	A1	
-10740	A1	
-10744	A1	
-10745	A1	
-10750	A1	
-10751	C2	
H 10752	A1	
-10753	A1	
-10755	B2	
-10757	B2	
-10760	B1	
-10765	B4	
-10766	B1	
-10767	C1	
-10768	A1	
-10770	A1	
-10771	A1	
-10783	B1	↓
-10784	A1	
LDW280-10788	B1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.C.

3

DETAIL SPEC REQ | CL III ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC C EO RELEASE: FR 10/17/6

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM-9(39)
LEM		LEM-10(40) LEM-11	(41) LEM-12(42)
LEM		LEM-13(43) LEM-14	(44) LEM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

APPROVED BY / DATE: 9/23/66 VD — | SUPPORT | RELIAB GROUP | GROUP LEADER — | STRESS GROUP 9-19 | LIAISON ENGRG | PROJ ENGRG 10-17-66 | GOVT AC 10-3-66

PRIORITY: C | DRAWING TITLE: NOTED | DRAWING NO.: LE0280 | EO NO. 294

ISSUED BY: L. DE TURRIS 7-18-66 X1441 SECTION Vehicle Design Int. GROUP NO. 280 PL 35 EMF

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

*

DWG. NO. LDW280-10766
EO NO. B2
CONTROL INFO NO LDW280A7594

DESCRIPTION OF E.O.
IN MOD/BLK
FOR -13, -15 & -17 REMOVE LM-3(33) THRU LM-15(45) EFF;
FOR -11, EFF LM-3(33) THRU LM-15(45) N/A SHOULD BE
LDW280-53213 (WAS LDW280-23213)

DETAIL SPEC REV ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD 1426 ok CCA 530 5

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
ADDITION OF (4) RCS INTERCONNECTS REQUIRES NEW INSTL	NOTED ABOVE	C L 7-5

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP
	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS	
LM		LM-3(33) THRU	LM-15(45)	✓			✓

APPROVED BY	JaP			F.W.R	RH			Bott
DATE	7/1/67			7-1-67	7/1		7/1/67	7-5-67
	VDI	~~SUPPORT~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	ANGLE - ASCENT STAGE - RCS INTERCONNECT & CROSS FEED VALVE SUPPORT	LDW280-10766	B2

ISSUED BY G BARNES / F. DeRESPINIS SECTION VDI GROUP NO. 335 PL 25

01 NAS 9-1100

ENG 32.1 REV 3-65

(R)

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

*

DWG. NO. LDW 280-10766 EO NO. B3
CONTROL INFO NO. LDW 280A-8374

CREATE -19 IDENTICAL TO -11 EXCEPT AS SHOWN:

$1\frac{9}{16}$ DIMENSION FOR -11 SHOULD BE $1\frac{5}{32}$ FOR -19

EFFECTIVITY: LM-3 (33) THRU LM-15(45)
NEXT ASS'Y: LDW 280-53213
QUANTITY: 4 REQ'D /MOD.

RESTRICT EFFECTIVITY OF -11 TO LTA-8(18), LTA-3(13), LM-1(31) AND LM-2(32)
(WAS LTA-8(18), LTA-3(13) AND LM-1(31) THRU LM-15(45))

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☑	LCD# 1426 OK CCA 580	5

REASON FOR EO
To ACCOMMODATE RCS INTERCONNECTS

DESCRIPTION OF EO
CREATED -19
RESTRICTED -11 TO LTA-8(18), LTA-3(13) AND LM-1(31) & LM-2(32)
WAS LTA-8(18) LTA-3(13) LM-1(31) THRU LM-15 (45)

GAEC EO RELEASE C

MODEL	EFFECTIVITY: ~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	~~SUB-CONTR UNIT NO.~~
LM	LM-3(33)	THRU LM-15	(45)

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			✓

	V.O.I	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~INT~~
APPROVED BY	Jef			JDRes	Bw			
DATE	8/3/67			8-3-67	8-3		8/3/67	8/3/67

PRIORITY C
DRAWING TITLE: ANGLE- A/S, M/S, RCS INTERCONNECT & CROSS FEED VALVE SUPPORT
DRAWING NO. LDW 280-10766
EO NO. B3

ISSUED BY Geo. W. Rocklein, x7033 8/3/67 SECTION Veh. Des. Int. GROUP NO. 335 PL 25

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280	EO NO. 832
CONTROL INFO NO. LDW 280B-0904	

FOR THE FOLLOWING DWGS; FOR DASH No. NOTED ✱
ADD EFF: LFM.50 & PA-1(47) & NEXT ASSY: LTM280-26968
(✱ USE APPLICABLE DASH No. IN DESCRIPTION OF E.O.)

DRAWING No.	DASH No.	No. REQ'D	CHG. No.
LDW280-10764	-17, -19 -29 -21, -23, -25, -27	2 EA 1 EA.	C4
-10765	-15. -16-17. -18 -31, -32, -33, -34	1 EA.	C3
-10766	-19	4 EA.	B4
-10954	-11, -12	1 EA.	A4
-11885	-11, -13, -14 -15 -17, -19	1 EA	A2
-11886	-13, -16, -17, -19 -21, -23, -25	1 EA.	A2
-11396	-11, -13, -14, -17, -18 -19, -23, -27, -31	1 EA.	B1
-11897	-11, -13, -15, -17, -19	1 EA.	A1
-11898	-13, -19, -31, -33-35 -17	1 EA 4 EA	A5
-11899	-11, -13, -15 -17, -23, -25	1 EA.	A3
-11900	-11, -13, -15 -17, -19, -21	1 EA	A1
-11901	-11, -16, -17, -19 -21, -23, -25	1 EA.	A4
-11902	-11, -13, -15	1 EA.	A1
-11903	-19, -20, -21, -22 -23, -24, , -25	1 EA.	A6
	-27	2 EA.	
LDW280-11934	-11, -13, -15, -17 -18, -19, -21, -22	1 EA.	A1

LFM

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD #2019 CCA 667

(5)

REASON FOR EO: UPDATE PA-1(47) TO LM-3(33) CONFIG.

DESCRIPTION OF EO: FOR ✱ ADDED PA-1(47) EFF.

GAEC EO RELEASE: SK 1/10/68

MODEL	PROCURING ~~ACTIVITY NO~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM #50	PA-1 (47)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		NOT	REQ

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONF~~
APPROVED BY								
DATE	1/10/68			1-8-68	1-9		1/8/68	1-10-68
—	VDI							

PRIORITY: C
DRAWING TITLE: NOTED ABOVE
DRAWING NO.: LEO 280
EO NO.: 832

1-9
ISSUED BY D. LOZINSKI X7033 SECTION V.D.I. GROUP NO. 335 PL 25

01
NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28221	LTA-1 (11)	1 EA

PART NO. LDW280-10767-19,-20

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23221	LEM-6 (36)	1 EA
		-5 (35)	
		-4 (34)	
		LEM-3 (33)	
	LDW280-23221	LTA-3 (13)	
LEM	LDW280-28221	PA-1	1 EA
LEM	LDW280-28221	LEM-2 (32)	1 EA
LEM	LDW280-28221	LEM-1 (31)	1 EA
LEM	LDW280-28221	LTA-8 (18)	1 EA.

PART NO. LDW280-10767-13,-14 — GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23221	LEM-6 (36)	2
		LEM-5 (35)	2
		LEM-4 (34)	2
		LEM-3 (33)	2
	LDW280-23221	LTA-3 (13)	2
LEM	LDW280-28221	PA-1	2
LEM	LDW280-28221	LTA-1 (11)	2
LEM	LDW280-28221	LEM-2 (32)	2
LEM	LDW280-28221	LEM-1 (31)	2
LEM	LDW280-28221	LTA-8 (18)	2

PART NO. LDW280-10767-17 — GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23221	LEM-6 (36)	1 EA
		LEM-5 (35)	
		LEM-4 (34)	
		LEM-3 (33)	
LEM	LDW280-23221	LTA-3 (13	1 EA

PART NO LDW280-10767-21 & -22

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23221	LEM-6 (36)	1 EA
		LEM-5 (35)	
		LEM-4 (34)	
		LEM-3 (33)	
	LDW280-23221	LTA-3 (13)	
LEM	LDW280-28221	PA-1	1 EA
LEM	LDW280-28221	LTA-1 (11)	1 EA
LEM	LDW280-28221	LEM-2 (32)	1 EA.
LEM	LDW280-28221	LEM-1 (31)	1 EA.
LEM	LDW280-28221	LTA-8 (18)	1 EA.

PART NO. LDW280-10767-11,-12,-15,-16 — GAEC SCH NO. 32-4 31-7

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED 22

GRUMMAN REL INFO B

PRIM NO.	LE(001)		
215	PP12	A	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 | LINE ITEM # 1 | DOCUMENTATION TYPE # II

DRAWN BY	M. PALERMO 1-14-66	RELIABILITY	—
LAYOUT BY	VALENTINE JR.		
CHECKED BY	EG 1-19-66		
GR. LEADER	1/21/66		
VEH DES INT	1/21/66		
STRUCTURES	EB 1/27	PROJ ENGR	TJ Kelly 1/31/66
STRUCTURES	1-27	REL GROUP	Botti 2-3-66
WEIGHTS	W. G. Mandras 1-27		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE - MID. SECT.
PRPLN PRESSURE MODULE

SIZE B | CODE IDENT NO. 26512 | LDW280-10767 | B

SCALE NONE | SHEET 1.00 OF 3

7.1 9-64

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	~~SH CHG LTR~~	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
												REWORK	SCRAP			
A	1	1.10 & 3.00 1.00							EO A1	IN FLD ZONE 2B, THICKNESS AFTER CHEM MILLING $.038^{+.005}_{-.000}$ WAS $.040^{+.002}_{-.000}$	PA-1, LTA-1, 8, LEM 1-2	✓		T.FREDA 4-14-66		
B	1	1.00 & 1.10						✓	EO B1	ADDED 1EA OF -11, -12, -13, -14, -15, -16 AND 2 OF -17 ON LDW280-23221 FOR LTA-3(13), LEM-3(33), LEM-4(34), LEM-5(35), LEM-6(36).	LTA-3; LEM-3 THRU-LEM-6	NOT	REQ'D	E.SULSENTI 6-23-66		
	2	1.00, 1.10 2.00 & 3.00	3A					✓	EO B2	ADDED -21 & -22 BRACKETS						

FOR CONTINUATION OF REVISIONS SEE SHEET

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10767	B
SCALE NONE			SHEET 1.10

ENG 77.3 5-64

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10767-22	E	GUSSET	AL ALLOY SH	QQ-A-250/12	7075	.040 x 3 1/2 x 4	T6	88	
		LDW280-10767-21	E	GUSSET	AL ALLOY SH	QQ-A-250/12	7075	.040 x 3 1/2 x 4	T6	88	
		LDW280-10767-20	E	BEAM	AL ALLOY SH	QQ-A-250/12	7075	.071 x 5 1/4 x 7 1/4	T6	88	
		-19	E	BEAM				.071 x 5 1/4 x 7 1/4			
		-17	E	ANGLE				.040 x 2 1/8 x 3 3/8			
		-16		GUSSET				.050 x 3 3/8 x 4			
		-15		GUSSET				.050 x 3 3/8 x 4	T6		
		-14		BEAM				.071 x 7 1/2 x 9 1/2	CM,T6		
		-13		BEAM				.071 x 7 1/2 x 9 1/2	CM,T6		
		-12		BRACKET				.040 x 4 7/8 x 5 5/8	T6		
		LDW280-10767-11	E	BRACKET	AL ALLOY SH	QQ-A-250/12	7075	.040 x 4 7/8 x 5 5/8	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030
T6	AL HEAT TREAT	MIL H-6088
CM	CHEM-MILLING	LSP14-26100

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

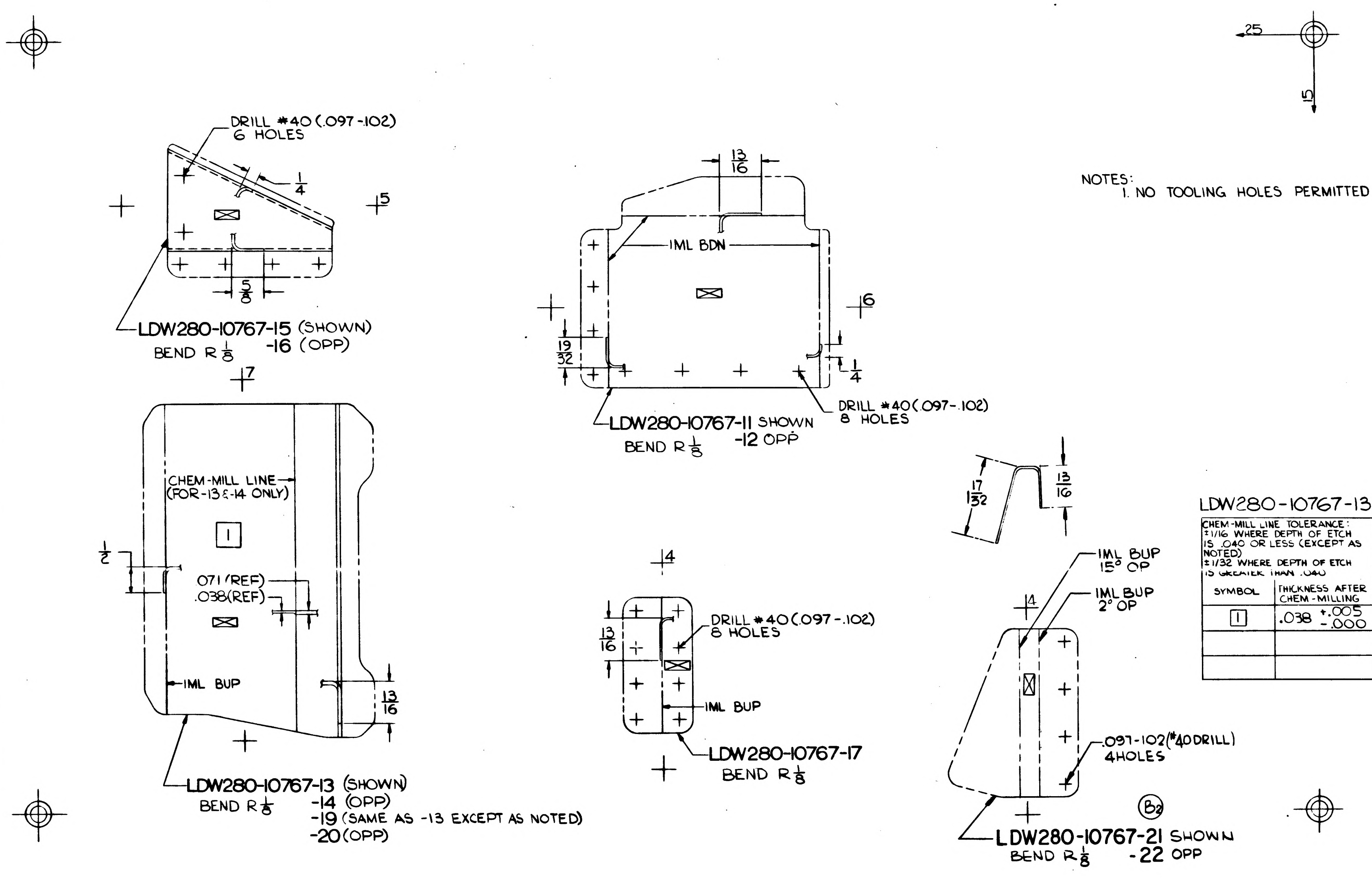
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10767	B
SCALE	NONE		SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


DRILL #40 (.097-.102)
6 HOLES
1/4
5/8
5
LDW280-10767-15 (SHOWN)
-16 (OPP)
BEND R 1/8
13/16
IML BDN
19/32
6
1/4
DRILL #40 (.097-.102)
8 HOLES
LDW280-10767-11 SHOWN
-12 OPP
BEND R 1/8
7
CHEM-MILL LINE
(FOR -13 & -14 ONLY)
1
1/2
.071 (REF)
.038 (REF)
IML BUP
13/16
LDW280-10767-13 (SHOWN)
BEND R 1/8
-14 (OPP)
-19 (SAME AS -13 EXCEPT AS NOTED)
-20 (OPP)
4
13/16
DRILL #40 (.097-.102)
8 HOLES
IML BUP
LDW280-10767-17
BEND R 1/8
17
1 3/32
13/16
IML BUP
15° OP
IML BUP
2° OP
4
.097-.102 (#40 DRILL)
4 HOLES
B2
LDW280-10767-21 SHOWN
BEND R 1/8
-22 OPP
25
15

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.

LDW280-10767-13 & -14

CHEM-MILL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	*DEPTH OF CUT
1	.038 +.005 -.000	.033 (REF)

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-10767	B
	SCALE FULL			SHEET 3.00

2 FOR PHOTO REPRODUCTION 1

K2

01

NAS 9-1100

22

GRUMMAN AIRCRAFT ENGINEERING CO.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 20.2 REV 2-65

NO. LEO230 EO NO. 294
CONTROL INFO NO. LDW28C A0656

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9 (39), LEM 10(40), LEM-11(41), LEM-12 (42), LEM 13 (43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4 ✱

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10719	A1	SEE DRAWING
-10720	A1	
-10723	B1	
-10724	A1	
-10726	B1	
-10727	A1	
-10739	A1	
-10740	A1	
-10744	A1	
-10745	A1	
-10750	A1	
-10751	C2	
H 10752	A1	
-10753	A1	
-10755	B2	
-10757	B2	
-10760	B1	
-10765	B4	
-10766	B1	
-10767	C1	
-10768	A1	
-10770	A1	
-10771	A1	
-10783	B1	
-10784	A1	
LDW280-10788	B1	SEE DRAWING

✱ USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH ✱ ADDED LEM-7 THRU LEM 15 EFF.

GAEC C EO RELEASE: FR 10/17/6

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM 9(39)
LEM		LEM-10(40) LEM-11(41)	LEM-12(42)
LEM		LEM-13(43) LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

APPROVED BY	WP			=	GW		AC	AC
DATE	9/23/66			=	9-19		10-17-66	10-3-66
	VD	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRS GROUP	LIA SUB ENGRG	PROJ ENGRG	GOVT

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO: LEO280
EO NO. 294

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION Vehicle Design Int. GROUP NO. 280 P1 35 EMF

01

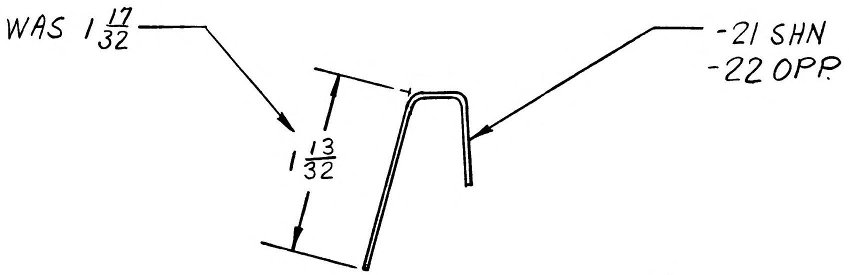
NAS 9-1100

B

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER EMF-A

DWG. NO. LDW-280-10767		EO NO. C2	
CONTROL INFO NO. LM-3-4682			



* PARTS CONFORM TO THIS EO. 3

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☐

REASON FOR EO
TO HAVE DIMENSION AGREE
WITH FLAT PATTERN

DESCRIPTION OF EO
IN FIELD FOR -21 & -22
$1\frac{13}{32}$ WAS $1\frac{17}{32}$

GAEC EO RELEASE ✓ VE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-3(13)	
		LM-3(33) THRU -15(45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓ REVISE DWG	RECORD EO	* REWORK	SCRAP

APPROVED BY				—	BM		RMC	
DATE	2/9/67			—	1-21-67	1-21-67	1-23-67	
# 1	V01	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C3	BRACKET A/S M/S PR PLN PRESSURE MODULE	LDW280-10767	C2

ISSUED BY LIAISON / TARTAMELLA (X2151) VB SECTION VDI GROUP NO. 335 PL 35

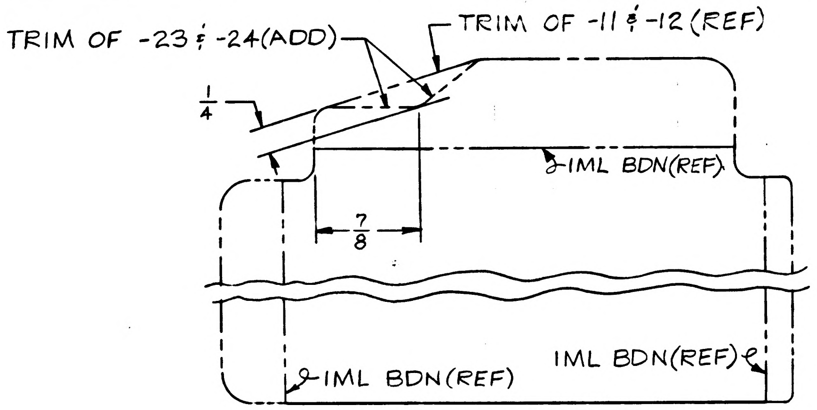
01

NAS 9-1100

A
H.G.
ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO.	LDW280-10767	EO NO.	C3
CONTROL INFO NO.	LM-2-3415		



IN FLD, B/M & MOD/BLK:
ADD -23 & -24
(-23 & -24 REPLACE -11 & -12
FOR LM-4(34) THRU LM-15(45)
& ARE IDENTICAL TO -11 & -12
EXCEPT AS SHOWN)

IN MOD/BLK FOR -11 & -12:
DELETE LM-4(34) THRU
LM-15(45) EFFECTIVITY

NOTE: -11 & -12 MAY BE
REWORKED TO -23 & -24

-11 SHOWN } (REF)
-12 OPP } (REF)
-23 SHOWN } (ADD)
-24 OPP } (ADD)

TO BE LOFTED

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG		2

REASON FOR EO: ELIMINATE INTERFERENCE WITH RIVET HEAD LOCATED IN HONEYCOMB BASE OF MODULE

DESCRIPTION OF EO: IN FLD, B/M & MOD/BLK, ADDED -23 & -24
IN MOD/BLK, FOR -11 & -12, DELETED LM-4(34)
THRU LM-15(45) EFFECTIVITY

GAEC C EO RELEASE: J/C 02025

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-4(34)	
		THRU	
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY								
					MBJ	CH		
DATE					3/17/67	3/16/67	3/21/67	3/18/67
-1-		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONF~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	BRACKET~ASCENT STAGE~MID-SECT PROPELLANT PRESSURE MODULE	LDW280-10767	C3

ISSUED BY LIAISON J. MALONEY 3/16/67 X3604 SECTION V.D.I. GROUP NO. 335 PL 25

01 NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28051	LEM-2(32)	1 EA
	LDW280-28051	LEM-1(31)	1 EA
	LDW 280-28051	LTA-8(18)	1 EA
	LDW280-54051	LEM-6(36)	1 EA
	LDW280-54051	LEM-5(35)	1 EA
	LDW280-54051	LEM-4(34)	1 EA
	LDW280-53051	LEM-3(33)	1 EA
LEM	LDW280-23051	LTA-3(13)	1 EA
PART NO. LDW 280-10768-11-13		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28051	LEM-2(32)	1 EA
LEM	LDW280-28051	LEM-1(31)	1 EA
LEM	LDW280-28051	LTA-8(18)	1 EA
PART NO. LDW280-10768-15-17		GAEC SCH NO. 31.3	

(3)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00						
REV											
SHEET											
REV											
SHEET											
REV											

LAST SECT LTR USED		GRUMMAN REL° INFO	
LAST DASH NO. USED	17	PRIM NO. 215	VE(001) PP12

ENG 77.1 9-64

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±½°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	GENTILE 12.30.65	RELIABILITY	
LAYOUT BY	E. STAHL 1/10/66		
CHECKED BY	M 1.8.66		
GRP. LEADER	J. PUSATERI 1/10/66		
VEH. DES. INT	W. BISCHOFF		
STRUCTRUES	1-11	PROJ ENGR	1/14
STRUCTRUES	HILDERMAN 1/11	REL GROUP	1/17/66
WEIGHTS	1-13		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

GUSSET
ASCENT STAGE CABIN - DOCKING
WINDOW

SIZE B
CODE IDENT NO. 26512
LDW280-10768
SCALE NONE
SHEET 1.00 OF 3

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10768-17	E	GUSSET	AL ALLOY SH	QQA283	7075-T6	.040 × 3 × 4	NONE	88	
								LDW280-10768-15	E	GUSSET	AL ALLOY SH	QQA283	7075-T6	.040×3¾×4	NONE	88	
								LDW280-10768-13	E	GUSSET	AL ALLOY SH	QQA283	7075-T6	.040×3×4	NONE	88	
								LDW280-10768-11	E	GUSSET	AL ALLOY SH	QQA 283	7075-T6	.040×3×4	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10768

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

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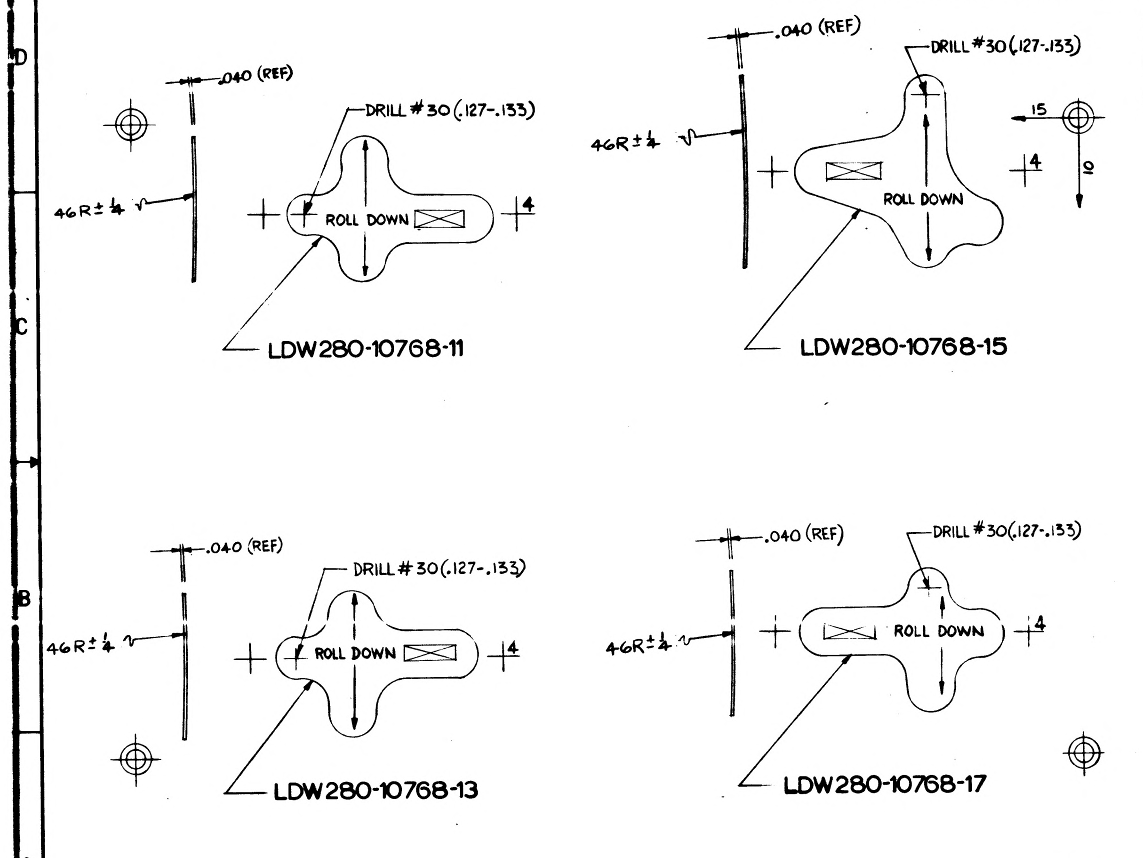
NAS 9-1100

NOTE: NO TOOLING HOLES PERMITTED IN PARTS.



.040 (REF)
DRILL #30 (.127-.133)
46R ± 1/4
ROLL DOWN
4
LDW280-10768-11
.040 (REF)
DRILL #30 (.127-.133)
46R ± 1/4
ROLL DOWN
15
10
4
LDW280-10768-15
.040 (REF)
DRILL #30 (.127-.133)
46R ± 1/4
ROLL DOWN
4
LDW280-10768-13
.040 (REF)
DRILL #30 (.127-.133)
46R ± 1/4
ROLL DOWN
4
LDW280-10768-17

TEAM WCG

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG	
RUBBER STAMP PART NUMBERS AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY	✓
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-10768

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
LEM	SIZE C	CODE IDENT NO. 26512	LDW280-10768	
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

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NAS 9-1100

22

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CO
CODE IDENT NO. 26512
ENGINEERING ORDER

NO. LE0230
EO NO. 294
CONTROL INFO NO. LDW28C A0656

* TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM 10(40), LEM-11(41), LEM-12(42), LEM 13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4 34

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10719	A1	SEE DRAWING
-10720	A1	
-10723	B1	
-10724	A1	
-10726	B1	
-10727	A1	
-10739	A1	
-10740	A1	
-10744	A1	
-10745	A1	
-10750	A1	
-10751	C2	
H 10752	A1	
-10753	A1	
-10755	B2	
-10757	B2	
-10760	B1	
-10765	B4	
-10766	B1	
-10767	C1	
-10768	A1	
-10770	A1	
-10771	A1	
-10783	B1	
-10784	A1	
LDW280-10788	B1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL III ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE: FR 10/17/6

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37), LEM 8(38)	LEM 9(39)
LEM		LEM-10(40) LEM-11	(41) LEM 12 (42)
LEM		LEM-13(43) LEM-14	(44) LEM-15(45)

DRAWING CHANGE REQD: ✓ REVISE DWG ☐ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D

APPROVED BY: WP 9/23/66 VD

GROUP LEADER: =
STRESS GROUP: 9.9
PROJ ENGRG: 10-17-66
GOVT: AC 10-3-66

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO.: LE0280

EO NO. 294

ISSUED BY L. DE TURRIS 7-18-66 X 1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 35 EMF

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO.			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10769-13&-17			
LEM	LDW280-23240	LEM-15(45)	2EA
LEM	LDW280-23240	LEM-14(44)	2EA
LEM	LDW280-23240	LEM-13(43)	2EA
LEM	LDW280-23240	LEM-12(42)	2EA
LEM	LDW280-23240	LEM-11(41)	2EA
LEM	LDW280-23240	LEM-10(40)	2EA
LEM	LDW280-23240	LEM-9 (39)	2EA
LEM	LDW280-23240	LEM-8(38)	2EA
LEM	LDW280-23240	LEM-7(37)	2EA
LEM	LDW280-23240	TM-2A/R(60)	2EA
LEM	LDW280-23240	LEM-6(36)	2EA
LEM	LDW280-23240	LEM-5(35)	2EA
LEM	LDW280-23240	LEM-4(34)	2EA
LEM	LDW280-23240	LEM-3(33)	2EA
LEM	LDW280-23240	LEM-2(32)	2EA
LEM	LDW280-23240	LEM-1(31)	2EA
LEM	LDW280-23240	LTA-8(18)	2EA
LEM	LDW280-23240	LTA-3(13)	2EA
LEM	LDW280-23240	LTA-1(11)	2EA
LEM	HAMILTON STD	TEST(72)	6EA

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO. 52-44 31-2	REQD PER MODULE OR END ITEM
PART NO. LDW280-10769-11			
LEM	LDW280-23122	LEM-15(45)	1
		THRU	
LEM	LDW280-23122	LEM-7(37)	1
LEM	LDW280-23240	LEM-15(45)	1
LEM	LDW280-23240	LEM-14(44)	1
LEM	LDW280-23240	LEM-13(43)	1
LEM	LDW280-23240	LEM-12(42)	1
LEM	LDW280-23240	LEM-11(41)	1
LEM	LDW280-23240	LEM-10(40)	1
LEM	LDW280-23240	LEM-9(39)	1
LEM	LDW280-23240	LEM-8(38)	1
LEM	LDW280-23240	LEM-7(37)	1
LEM	LDW280-23240	TM-2A/R(60)	1
LEM	LDW280-23122	LEM-6(36)	1
LEM	LDW280-23122	LEM-5(35)	1
LEM	LDW280-23122	LEM-4(34)	1
LEM	LDW280-23122	LEM-3(33)	1
LEM	LDW280-23122	LEM-2(32)	1
LEM	LDW280-23122	LEM-1(31)	1
LEM	LDW280-23122	LTA-8(18)	1
LEM	LDW280-23122	LTA-3(13)	1
LEM	LTM280-26700	LTA-1(11)	1
LEM	HAMILTON STD.	TEST(72)	3

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	B	B	B	B
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED		GRUMMAN REL INFO/B	
		PRIM NO.	K(001)
LAST DASH NO. USED	-17	215	ME-3

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	SUPPA 1-4-66	RELIABILITY	—
LAYOUT BY	BLAZOSKY 1-17-66		
CHECKED BY	D.FASS 1-12-66		
GR LEADER	1/18/66		
VEH DES INT			
STRUCTURES		PROJ ENGR	2/3
STRUCTURES	Hilderman 2-1	REL GROUP	2-5-66
WEIGHTS	2-1		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TUBE
ASCENT STAGE-MID SECT-X28750
HAND GRIP

SIZE	CODE IDENT NO.		
B	26512	LDW280-10769	B
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 9-64

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00,1.10 2.00,3.00						EO A1	ADDED SH 1.10, SH 1.00 OF 4 WAS 1.00 OF 3. DELETED -15 & ADDED -17. ADDED TM-2A/R, LEM-7 THRU LEM-15 ADDED EO TO RECORD BLOCK.	LEM-1 THRU -15, LTA-1, -3, -8, TM-2A/R, QUAL TEST		✓	A. GIRIS 9-10-66		
B	1	1.00					✓	LEO-515	FOR -11 ADDED LM-7(37) THRU LM-15(45) EFF.	LM-7(37) THRU LM-15(45)	NOT	REQD.	S CARANO 11-1-68 L.D.		
	2	2.00,3.00					✓	E.O.B2	-11: LDW280-10769-11, SEE NOTE #3 WAS LDW280-10769-11. IN FINISH COLUMN "88 & SEE NOTE #3" WAS 88. ADDED NOTE #3	HAM. STD. TEST (10) LTA-1, 3 & -8 LM-1 THRU LM-6	✓				
	3	1.10					✓	E.O.B3	REF. E.O.B2: REMOVED LM-1(31) REQ'T.	LM-1(31)					
	4	1.10					✓	E.O.B4	-11 REF. E.O. B2: ADD LM-7 THRU LM-15 TO EFF.	LM-7(37) THRU LM-15(45)					
	5	3.00					✓	E.O.B5	REMOVED E.O.A1 FROM RECORD DATA BLOCK	LTA-3(13)					

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY				
B										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10769	B ③
SCALE NONE			SHEET 1.10

77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10769-17	E	TUBE	AL ALLOY TUB.	SEE NOTE 2	2219-T81	1 1/8 OD x .120 x 17 7/8	NONE	NONE	
		LDW280-10769-13	E	TUBE	AL ALLOY TUB.	SEE NOTE 2	2219-T81	1 1/8 OD x .120 x 1 3/4	NONE	NONE	
		LDW280-10769-11	E	TUBE	AL ALLOY TUB.	QQ-A-282	7075-T651	1 OD x .065 x 25 3/8	CM	88(SEE NOTE 3	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						CM	CHEMMILLING	LSP14-2600

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10769	B

SCALE NONE

SHEET 2 00

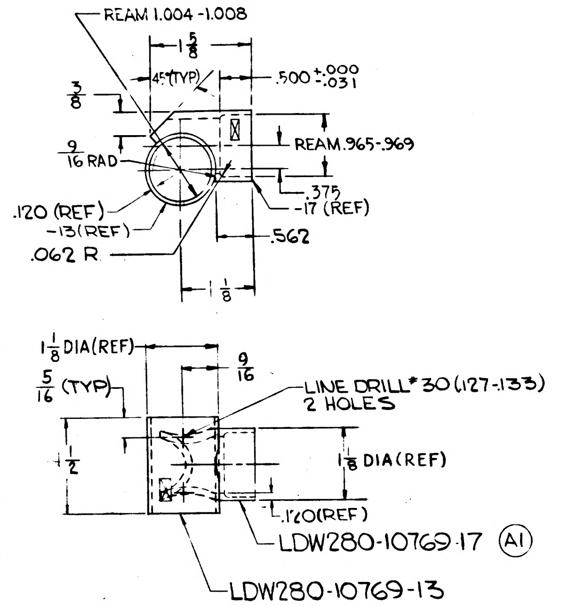
01

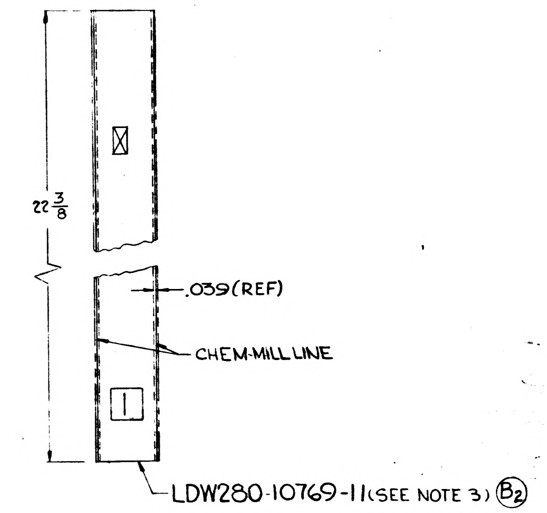
NAS 9-1100

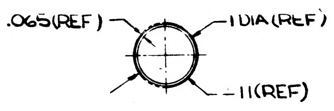
RECORD DATA		
MODEL	E.O. NO.	MODULE
LEM	A1	LTA-3

Ⓑ5

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒	✓


REAM 1.004 -1.008
$1\frac{5}{8}$
45°(TYP)
$.500 {}^{+.000}_{-.031}$
$\frac{3}{8}$
$\frac{9}{16}$ RAD
REAM .965-.969
.375
-17 (REF)
.120 (REF)
-13(REF)
.062 R
.562
$1\frac{1}{8}$
$1\frac{1}{8}$ DIA(REF)
$\frac{9}{16}$
$\frac{5}{16}$ (TYP)
LINE DRILL #30 (.127-.133)
2 HOLES
$\frac{1}{2}$
$1\frac{1}{8}$ DIA(REF)
.120(REF)
LDW280-10769-17 Ⓐ1
LDW280-10769-13


$22\frac{3}{8}$
.039(REF)
CHEM-MILL LINE
LDW280-10769-11 (SEE NOTE 3) Ⓑ2


.065(REF)
1 DIA(REF)
-11(REF)

LDW280-10769-11

CHEM-MILL LINE TOLERANCE
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
1	.039±.002	.026(REF)
☐		
☐		

NOTES:

1- NO TOOLING HOLES PERMITTED IN PARTS.

2- AL ALLOY PER MIL-A-8920 FOR CHEM COMP WW-T-700C FOR TOL. & TENSILE TEST, FED STD 184 FOR IDENTIFICATION PROPERTIES

F_{tu} (LONG) 60,000 PSI MAX
F_{ty} (LONG) 42,000 PSI MAX
E LONG 6% MIN.

3- APPLY 3M#401-F1 YELLOW PER LSP-14-4503.

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
	SIZE C	CODE IDENT NO. 26512	LDW280-10769	B
LEM MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

01 NAS 9-1100

01
NAS 9-1100

ENG 33.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE ' ENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280		EO NO. 1317	
CONTROL INFO NO. LDW280B 6824			

TO THE FOLLOWING DRAWINGS LISTED BELOW & THEIR *DASH NUMBERS RESTRICT TO LTA3(13), LTA8(18) LM1(31) THRU LM14(44) WAS LTA3(13), LTA8(18) LM1(31) THRU LM15(45)

DWG #	TITLE	*DASH #	QUANTITY	N/A	EO#
LDW280-10769	TUBE - X287.50 HANDGRIP	-11	1	LDW280-23122	C1
		-13 & -17	1EA	LDW280-23240	
LDW280M10339	PIN A/S - M/S SUIT CIRCUIT ASSY	-1	2	LDW280-23122	B3
LDW280M10340	FITTING A/S - M/S SUIT CIRCUIT ASSY	-1	2	LDW280-23122	B4
LDW280M10341	FITTING A/S - M/S SUIT CIRCUIT ASSY	-1	2	LDW280-23121	B7
LDW280M10342	FITTING A/S - M/S SUIT CIRCUIT ASSY	-1	2	LDW280-23121	C7
LDW280M10343	FITTING A/S - M/S SUIT CIRCUIT ASSY	-1	6	LDW280-23122	B3
LDW280M10986	INSERT A/S - M/S SUIT CIRCUIT ASSY	-1 & -3	1 EA	LDW280-23122	B3
LDW280-23121	TUBE ASSY A/S - M/S SUIT CIRCUIT ASSY SPT	-3 & -5	1EA	LDW280-23122	C6
LDW280-10399	TUBE A/S - M/S SUIT CIRCUIT ASSY	-13	2	LDW280-23121	B3
LDW280-23240	TUBE ASSY A/S - M/S X287.5	-3	2	LDW280-23121	B3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 3587 PKG # 11

(5)

REASON FOR EO: ELIMINATION OF CERTAIN EQUIP IN THE LM15 A/S

DESCRIPTION OF EO: IN MOD BLK FOR * RESTRICTED TO LTA3(13), LTA8(18) LM1(31) THRU LM14(44) WAS LTA3(13) LTA8(18) LM1(31) THRU LM15(45)

GAEC RELEASE 3-27-69

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM15 (45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG	RECORD EO	REWORK	SCRAP
✓			✓

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY								
DATE	3/6/69			3/6/69			3/20/69	3-26-69

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE ABOVE	LEO 280	1317

4-15-69
ISSUED BY P. WEISSLITZ x86048 SECTION VDI GROUP NO. 335 PL 25

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23044	LEM-6 (36)	2 EA
		LEM-5 (35)	
		LEM-4 (34)	
		LEM-3 (33)	
LEM	LDW280-23044	LTA-3 (13	2 EA

PART NO. LDW280-10770-11 & -19

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23044	LEM-6 (36)	1 EA
		LEM-5 (35)	
		LEM-4 (34)	
		LEM-3 (33)	
LEM	LDW280-23044	LTA-3 (13)	1 EA

PART NO. LDW280-10770-13, -15 & -17

GAEC SCH NO. 32.5

(3)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN RELINFO	
LAST DASH NO. USED	-19	PRIM NO. 215	LE(001) PP12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS ± 1/32 DECIMALS ± .020 ANGLES ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	D.SANTOPIETRO	~~RELIABILITY~~	
LAYOUT BY	J.CARROLL		
CHECKED BY	EG 1-18-66		
GR LDR	1/21/66		
VEH.DES.INT.	1/20/66		
STRUCTURES	1-25	PROJ ENGR	1/26
STRUCTURES	Hilderman 1-26	REL GROUP	1/26
WEIGHTS	1-26		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

STIFFENER
ASCENT STAGE ~ MID-SECTION ±Y36.700

SIZE B
CODE IDENT NO. 26512
LDW280-10770
SCALE NONE
SHEET 1.00 OF 3

ENG 77.1 9-64

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10770 -19	E	STIFFENER	AL ALLOY SH	QQ-A-283	7075	.032 X 1 3/4 X 14 1/2	T6	88	
		-17						.036 X 4 1/4 X 23 3/4	T6 CM		
		-15						.036 X 4 1/4 X 23 3/4	T6 CM		
		-13						.050 X 2 1/2 X 15 1/8	T6		
		LDW280-10770 -11	E	STIFFENER	AL ALLOY SH	QQ-A-283	7075	.020 X 1 3/4 X 12 1/2	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T6	HEAT TREAT	MIL-H-6088
						CM	CHEM-MILLING	LSP14-26100

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10770

SCALE NONE

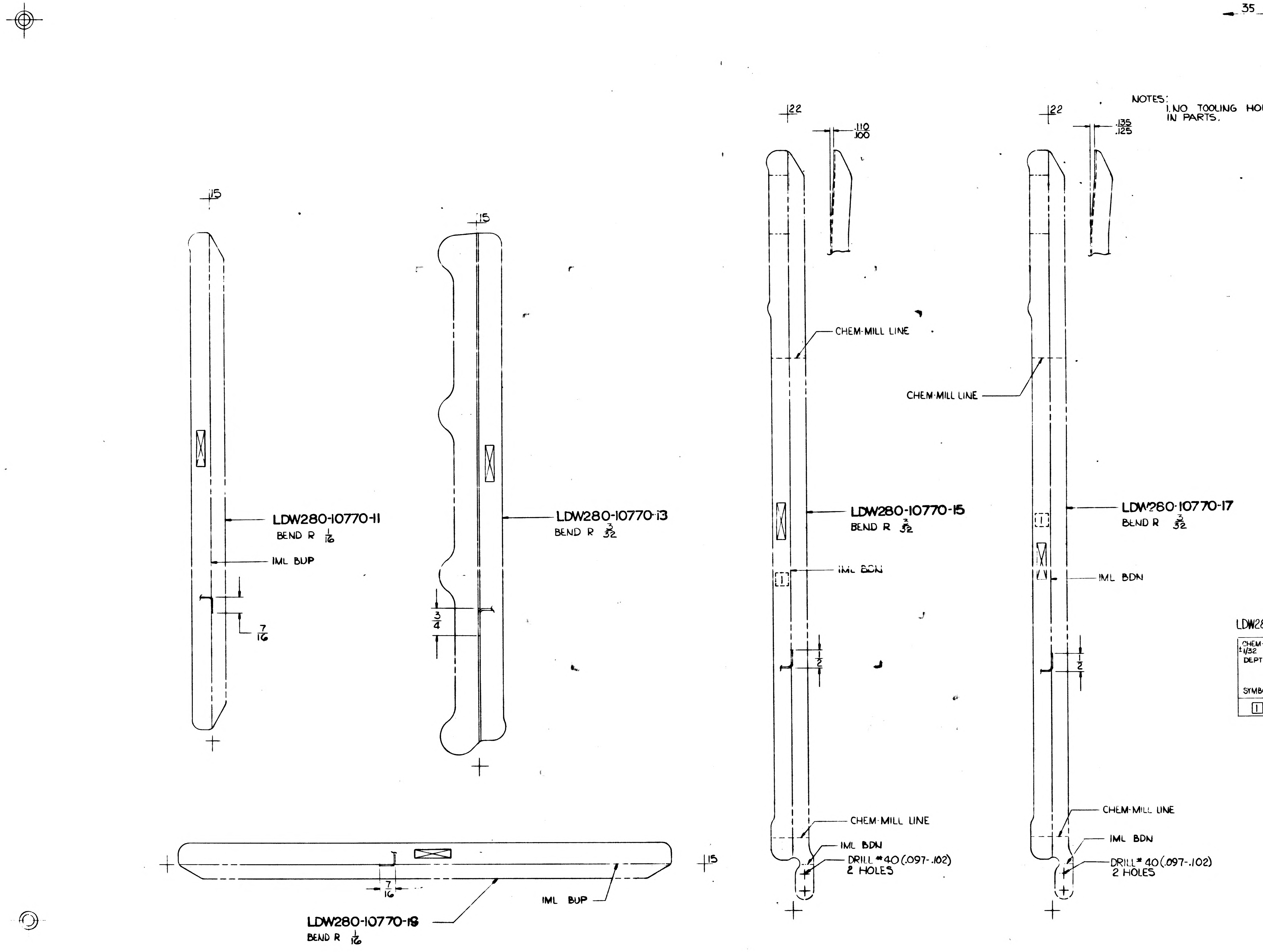
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.



35
25
.15
LDW280-10770-11
BEND R 1/16
IML BUP
7/16
.15
LDW280-10770-13
BEND R 3/32
3/4
.22
.110
.100
CHEM-MILL LINE
LDW280-10770-15
BEND R 3/32
IML BDN
1/2
CHEM-MILL LINE
IML BDN
DRILL #40 (.097-.102)
2 HOLES
.22
.135
.125
CHEM-MILL LINE
LDW280-10770-17
BEND R 3/32
IML BDN
1/2
CHEM-MILL LINE
IML BDN
DRILL # 40 (.097-.102)
2 HOLES
.15
7/16
IML BUP
LDW280-10770-19
BEND R 1/16

LDW280-10770-15 & -17

CHEM-MILL LINE TOLERANCE ±1/32 FOR ALL CHEM-MILL DEPTHS.

SYMBOL	THICKNESS AFTER CHEM-MILLING	✱ DEPTH OF CUT
1	.020 +.002 -.002	.016 (REF)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS ALLOY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LEM	E	26512	LDW280-10770
	SCALE FULL		SHEET 3.00

2 FOR PHOTO REPRODUCTION 1

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22

ENG 30.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CO.
CODE IDENT NO. 26512
ENGINEERING ORDER

NO. LE0280 EO NO. 294
CONTROL INFO NO. LDW280 A0656

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS* THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM 10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4 34

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280- 10719	A1	SEE DRAWING
- 10720	A1	↑
- 10723	B1	
- 10724	A1	
- 10726	B1	
- 10727	A1	
- 10739	A1	
- 10740	A1	
- 10744	A1	
- 10745	A1	
- 10750	A1	
- 10751	C2	
H 10752	A1	
- 10753	A1	
- 10755	B2	
- 10757	B2	
- 10760	B1	
- 10765	B4	
- 10766	B1	
- 10767	C1	
- 10768	A1	
- 10770	A1	
- 10771	A1	
- 10783	B1	↓
- 10784	A1	
LDW280- 10788	B1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
ADDITIONAL REQUIREMENTS	FOR DASH * ADDED LEM-7 THRU LEM 15 EFF.	FR 10/17/6

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37), LEM-8(38), LEM-9(39)	
LEM		LEM-10(40), LEM-11(41), LEM-12(42)	
LEM		LEM-13(43), LEM-14(44), LEM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D REWORK SCRAP

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	STATION ENG'G	PROJ ENGRG	GOVT
APPROVED BY	WD			—	BW			AC
DATE	9/23/66 V.D.			—	9-V		10-17-66	10-3-66

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	NOTED	LE0280	294

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO 280 35 EMF

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23044	LEM-6(36)	2EA
↕	↕	LEM-5 (35)	↕
↕	↕	LEM-4 (34)	↕
↕	↕	LEM-3 (33)	↕
LEM	LDW280-23044	LTA-3 (13)	2 EA
PART NO. LDW280-10771-11 & -13		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23044	LEM-6(36)	1 EA
↕	↕	LEM-5 (35)	↕
↕	↕	LEM-4 (34)	↕
↕	↕	LEM-3 (33)	↕
LEM	LDW280-23044	LTA-3 (13)	1 EA
PART NO. LDW280-10771-15, -17 & -19		GAEC SCH NO. 32.5	

(3)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00						
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO	
LAST DASH NO. USED	-19	PRIM NO. 215	LE(001) PP 12

ENG 77.1 9-64

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS ± 1/32 DECIMALS ± .020 ANGLES ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	D.SANTOPIETRO	RELIABILITY	—
LAYOUT BY	J.CARROLL Jac		
CHECKED BY	EG 1-18-66		
GR.LDR.	Whilly 1/21/66		
VEH.DES.INT	[illegible] 1/20/66		
STRUCTURES	FEB BW 1-25	PROJ ENGR	D Cuf 1/28
STRUCTURES	Hilderman 1-25	REL GROUP	Lippincott 1/29/66
WEIGHTS	W.G. Flandras 1/26		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

STIFFENERS
ASCENT STAGE-MID-SECTION ±Y36,700

SIZE B
CODE IDENT NO. 26512
LDW280-10771
SCALE NONE
SHEET 1.00 OF 3

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10771-19	E	STIFFENER	AL ALLOY SH	QQ A 283	7075	.045 X 4¼ X 23¾	T6 CM	88	
		-17 ↓	↓	↓	↓	↓	↓	.045 X 4¼ X 23⅞	T6 CM	↓	
		-15						.050 X 2⅝ X 15¼	T6		
		-13						.045 X 3 X 14⅞	T6		
		LDW280-10771-11	E	STIFFENER	AL ALLOY SH	QQ-A-283	7075	.050 X 3 X 14⅞	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030
						CM	CHEM-MILLING	LSP14-26100

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B | CODE IDENT NO. 26512 | LDW280-10771

SCALE NONE | SHEET 2.00

ENG 77.2 7-65

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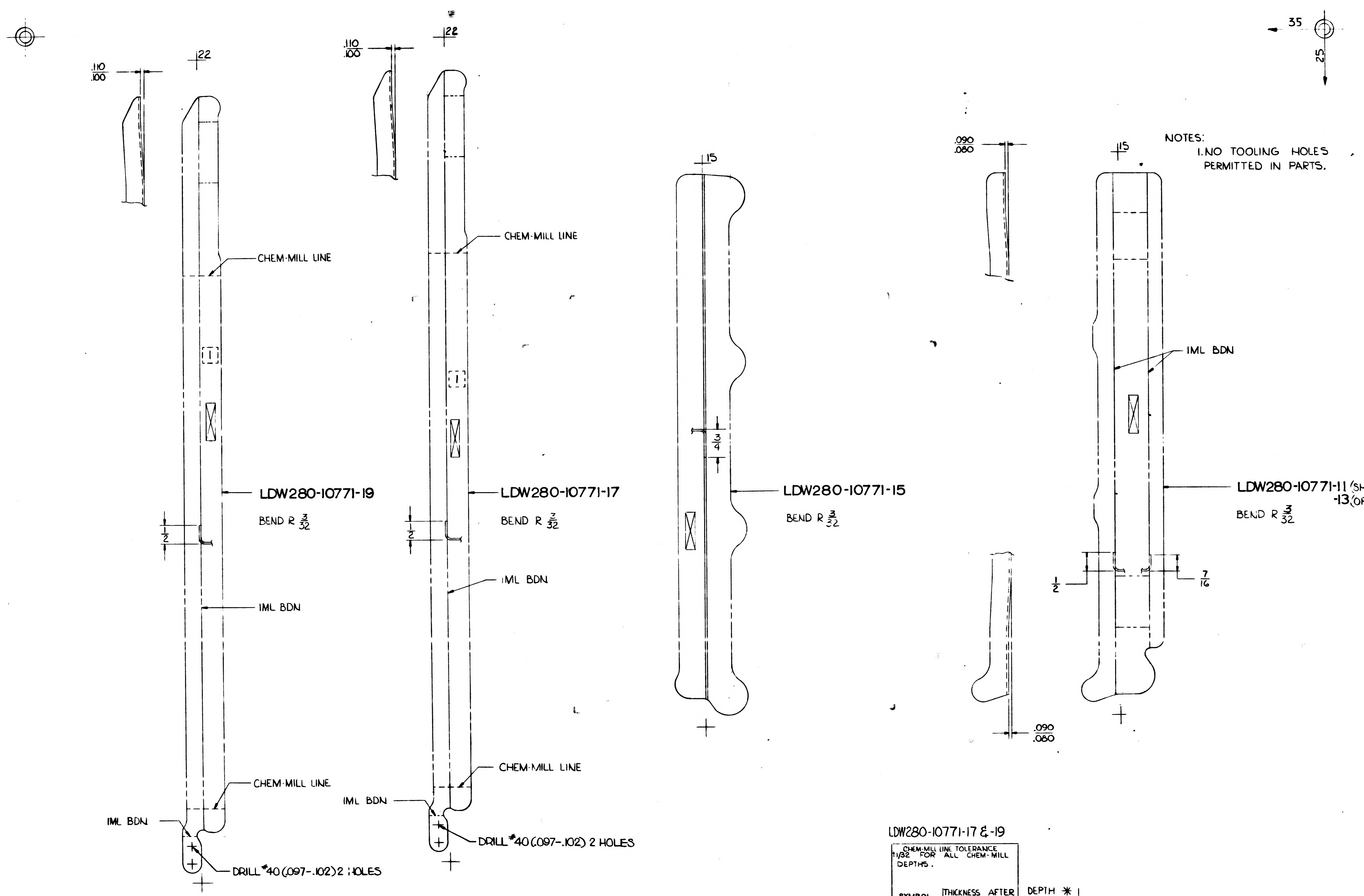
NAS 9-1100


.110
.100
.22
CHEM-MILL LINE
LDW280-10771-19
BEND R $\frac{3}{32}$
$\frac{1}{2}$
IML BDN
CHEM-MILL LINE
IML BDN
DRILL #40 (.097-.102) 2 HOLES
.110
.100
.22
CHEM-MILL LINE
LDW280-10771-17
BEND R $\frac{3}{32}$
$\frac{1}{2}$
IML BDN
CHEM-MILL LINE
IML BDN
DRILL #40 (.097-.102) 2 HOLES
.15
$\frac{3}{4}$
LDW280-10771-15
BEND R $\frac{3}{32}$
.090
.080
.15
IML BDN
LDW280-10771-11 (SHOWN)
-13 (OPP) EXCEPT AS NOTED
BEND R $\frac{3}{32}$
$\frac{1}{2}$
$\frac{7}{16}$
.090
.080
35
25

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.

LDW280-10771-17 & -19

CHEM-MILL LINE TOLERANCE ±1/32 FOR ALL CHEM-MILL DEPTHS.

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH * OF CUT
1	.032 ±.002	.013 (REF)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ±1/32	✓

LDW280-10771

LDW280-10771

101

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
SIZE E	CODE IDENT NO. 26512	LDW280-10771	
MODEL OR END ITEM LEM	SCALE FULL		SHEET 3.00

FOR PHOTO REPRODUCTION

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22

ENG 32.2 REV 3-63

GRUMMAN AIRCRAFT ENGINEERING CO.
CODE IDENT NO. 26512
ENGINEERING ORDER

NO. LE0280
EO NO. 294
CONTROL INFO NO. LDW280 A0656

*

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM 10(40), LEM 11(41), LEM-12(42), LEM 13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4 & 5

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10719	A1	SEE DRAWING
-10720	A1	↑
-10723	B1	
-10724	A1	
-10726	B1	
-10727	A1	
-10739	A1	
-10740	A1	
-10744	A1	
-10745	A1	
-10750	A1	
-10751	C2	
H 10752	A1	
-10753	A1	
-10755	B2	
-10757	B2	
-10760	B1	
-10765	B4	
-10766	B1	
-10767	C1	
-10768	A1	
-10770	A1	
-10771	A1	
-		
-10783	B1	↓
-10784	A1	
LDW280-10788	B1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC C EO RELEASE: FR 10/17/66

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM 7(37) LEM 8(38) LEM 9(39)	
LEM		LEM-10(40) LEM-11(41) LEM-12(42)	
LEM		LEM-13(43) LEM-14(44) LEM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D

APPROVED BY: WP
DATE: 9/23/66
VD

SUPPORT — RELIAB. GROUP —
GROUP — STRESS GROUP: GW 9-9
PROJ ENGRG: 10-17-66
GOVT: AC 10-3-66

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LE0280
EO NO.: 294

ISSUED BY L. DE TURRIS 7-18-66 X 441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 35 EMA

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10 2.00 & 3.00						EO A1	REMOVED LDW280-10772-11, -13, -15 & -19 FROM LTA-8 & ADDED LDW280-10772-21, -23, -25, -27 & -29 (SHEET 1 OF 5 WAS 1 OF 4, ADDED SHEET 1.10).	LTA-8		✓	N. CIOFFI 7-10-66		
B		1.00, 1.10 3.00	6C						REVISED TRIM & ADDED BDN FLANGE ON -11 & -23.	LTA-8 LM-1, LM-2	✓		SHANLEY 10-18-66		
C	1	1.00, 1.10, 3.00						EO C1	ADDED SLOT IN -21 & -23	LTA-8	✓		L. BRIDA 12-9-66		
	2	1.10						EO C2	ON SHT. 1.10 REV. B REVISED TRIM & ADDED BDN FLANGE ON -11 & -23 S/B -13 & -23	NOT REQD	NOT	REQD			
	3	3.00	9A 2A						.069-.074 (DRILL #50) WAS .069-.070 (DRILL #50) ON -11, -21 .069-.074 (DRILL #50) 12 WAS .069-.070 (DRILL #50) 11 ON -13, -23	LTA-8, LM-1, LM-2	NOT	REQD			
	4	1.00, 1.10, 2.00, 3.00, & 4.00							ADDED LDW 280-10772-31, -33, -35, -37 & -39	LM-3 THRU LM-15	NOT	REQD			
D	1	1, 1.10 & 4.00						EO D1	FOR -37, ADDED DRILL #30 (.127-.133)	LM-3 THRU -15	✓		P. CARSTENSEN 3-9-67		
	2	3.00 4.00	12A 12C A3 C3 12C	LCD 19-1108				EO D2	ON -11 TRIMMED PART AND ADDED "IML BUP FOR -11 ONLY" ZONES C12 & A12. ON -13 TRIMMED PART AND ADDED "IML BUP FOR -13 ONLY" ZONES C3 & A3. ADDED DRILL #50 (.069-.074) 4 2 PLACES. ADDED DRILL #50 (.06 -.074) (2) TO -13. ADDED DRILL #50 (.069-.074) (1) TO -11.	LM-1, LM-2					
	3								REF EO D1: NOT APPLICABLE (#30 HOLE EXISTS ON ORIGINAL DWG)	LM-3 THRU -15	NOT	REQ'D			
	4	3.00 & 4.00	2C						IN F/D ADDED: X, Y & Z REF COORDINATES TO DETAILS	LTA-8, LM-1 THRU -15					
	5	3.00	12C	LCD 19-1108					(REF EO D2) ON -11 AT X250.290 (REF), -Y18.501 (REF) ADDED ADDITIONAL .069-.074 (#50 DRILL) FOR BEND RELIEF. ECM	LM-1, LM-2	✓				
E	1	3.00 1.10	2C		✓			LEO 280-577	ADDED NOTE 2	LTA-8, LM-1 THRU LM-15	NOT	REQD	BURTON 4-26-68		
	2	3.00	3C 12C				✓	EO E2	REVISED TRIM OF -31 & -39	LM-3 THRU LM-15	✓				
	3	1.00 2.00, 3.00 4.00	5D-	O		✓		EO E3 LCD 2360	IN F/D, L/M & M/B ADDED -41 & -43 REMOVED -33 & -37. ADDED NOTE 3 & 4	LM 3 THRU LM-15		✓			

CHG APPROVED

LTR	GROUP LDR	VEC DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY	PROJ ENGR	REL GROUP
A								
D			3/27					
E								

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10772	E
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

LDW280-10772 G

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-56241	LM-15(45)	1 EA
		LM-14(44)	1 EA
		LM-13(43)	1 EA
		LM-12(42)	1 EA
		LM-11(41)	1 EA
		LM-10(40)	1 EA
		LM-9(39)	1 EA
		LM-8(38)	1 EA
LM		LM-7(37)	1 EA
LFM 448	LDW280-56241	LM-6(36)	1 EA
LFM 448	LDW230-54241	LM-5(35)	1 EA
LDW280-10772-53, -55, -56, -57, -58, -59 & -60			
LFM 140	LDW280-54241	LM-4(34)	1 EA
LM	LDW280-53241	LM-3(33)	1 EA
PART NO. LDW280-10772 -31 & -39		GAEC SCH NO. 30	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53241	LM-3(33)	1 EA
LDW280-10772-35, -41 & -43			
LM	LDW280-28241	LTA-8(18)	1 EA
PART NO. LDW280-10772-21, -23, -25, -27 & -29		GAEC SCH NO. 30	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 126	LDW280-28241	LTA-8(18)	1 EA
LDW280-10772-21-1, -23-1, -25-1, -27-1 & -29-1			
LFM 140	LDW280-54241	LM-4(34)	1
LDW280-10772 -45			
LM	LDW280-54241	LM5(35)	1 EA
LDW280-10772-47 & 51			
LM	LDW280-28241	LM-2(32)	1 EA
LM	LDW280-28241	LM-1(31)	1 EA
PART NO. LDW 280-10772-11-13 -15-17-19		GAEC SCH NO. 30	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	2.01	3.00	4.00
REV	G	E	G	G	G	G
SHEET		1.11				
REV		G				
SHEET						
REV						

LAST SECT LTR USED

LAST DASH NO. USED -60

GRUMMAN REL INFO G
PRIM NO. JK001
215 IE-16G-6/4/9

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM * 1
DOCUMENTATION TYPE II

DRAWN BY	T.MACAULAY 4-26-66	RELIABILITY	
LAYOUT BY	F. SHANLEY		
CHECKED BY	D.FASS 4-29-66		
GR LEADER	J. Puritan 5/3/66		
VEH DES INT	5/4		
STRUCTURES	5/6	PROJ ENGR	D Allen/RMC 5-16-66
STRUCTURES	Hilderman 5/6	REL GROUP	C. Caramanico 5-21
WEIGHTS	5/		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SHIELD
ASCENT STAGE - CABIN FRONT FACE
LOWER PANEL OUTBD

SIZE B
CODE IDENT NO. 26512
LDW280-10772 G
SCALE NONE
SHEET 1.00 OF 7

REV G 5-22-66

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
E	4	1.11,1.00 2.00,3.00		LFM 140		✓		EO E4 LCD2360	IN F/D L/M & M/B ADDED -45 IN M/B FOR -35 REMOVED LM-4 THRU LM-15 EFF. ADDED SH 1.11	LM-4 THRU LM-15	✓		BURTON 4-26-68		
	5	1.00,1.11 2.00,3.00 4.00		LFM 126		✓		LCD1021-33 OK	ADDED -21-1, 23-1, -25-1, -27-1, & -29-1	LTA-8 (18)	✓				5-21-68
	6						✓		REF EO E2. IN F/D & DESCRIPTION OF EO-39 S/B-33 D.J.	LM-3 THRU LM-15	✓				
	7	1.00 & 1.11		LFM 140		✓		LCD 2360	IN M/B FOR -41 & -43 REMOVED LM-4 THRU LM-15 EFF. IN M/B FOR -31 & -39 N/A FOR LM-4 THRU LM-15 (WAS) LDW280-53241. D.J.	LM-4 THRU LM-15	NOT	-41 & -43 REQ'D			
F	1								INC LEO 280-1001	LM 3 THRU LM 15			R SEGURSKY 4-10-69		4-11-69
	2	1.00 2.00 3.00	7A 7B 11A						INC EO F2	LM 6 THRU LM 15					
	3	1.00							INC LEO 280-1081	LM 5					
	4	1.00							INC LEO 280-1141	LM 6 THRU LM 15					
	5	3.00	12C	LFM 140					INC EO F5	LM 5					
G	1	1.00,2.00 2.01,3.00 & 4.00 1.11	A8 C2 C7 G7	LFM 448		/		LCD 3999	IN M/B L/M & F/D ADDED -53, -55, -56, -57, -58, -59 & -60. REMOVED -49. ADDED NOTE 7 & SH 2.01 D.FASS D.J.	LM-5 THRU LM-15			T. McCAULAY 6-2-69		

LTR	GROUP LDR	VEH DES INT	STRUCT	STRUCT	WEIGHTS	RELIABILITY	PROJ ENG	REL GROUP	THERMO
E	5/15	5/15/68	5/10/68	for FEB					5-10-68
G	6/3/69	6-3		6/3/69					

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10772	G
SCALE NONE			SHEET 1.11

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10772-51	E	SHIELD	AL ALY CLAD	QQ-A-430	5056-H191	.004 x 10 3/4 x 25	NONE	NOTE 5	7E
		LDW280-10772-47	E	SHIELD	AL ALY CLAD	QQ-A-430	5056-H191	.004 x 20 3/4 x 31 5/8	NONE	NOTE 5	11A
		LDW280-10772-29-1	E	SHIELD	MAKE FROM	LDW280-113	10-13-1	13 7/8 x 18 3/8	NONE	NONE	8A
		-27-1	E		MAKE FROM	LDW280-113	10-13-4	18 x 28 1/4			5D
		-25-1	E		MAKE FROM	LDW280-113	10-13-1	10 3/4 x 24 3/4			7C
		-23-1	E		MAKE FROM	LDW280-113	10-13-4	20 3/4 x 33 7/8			4B
		-21-1	E		MAKE FROM	LDW280-113	10-13-1	20 3/4 x 31 1/4			11B
		LDW280-10772-45	E	SHIELD	MAKE FROM LDW280-10870-11			10 3/4 x 25	NONE	NONE	7C
		LDW280-10772-43	E	SHIELD	SEE NOTE 3			.012 x 13 x 28 5/8	NONE	NONE	5D
		LDW280-10772-41	E	SHIELD	SEE NOTE 3			.012 x 20 3/4 x 34 1/4	NONE	NONE	4B
		LDW280-10772-39	E	SHIELD	MAKE FROM LDW280-10870-11			13 7/8 x 18 3/8	NONE	NONE	8A
		-35						10 3/4 x 25			7C
		-31			MAKE FROM LDW280-10870-11			20 3/4 x 31 5/8			11B
		-29			MAKE FROM LDW280-11310			13 7/8 x 18 3/8			8A
		-27						18 x 28 1/4			5D
		-25						10 3/4 x 24 3/4			7C
		-23						20 3/4 x 33 7/8			4B
		-21			MAKE FROM LDW280-11310			20 3/4 x 31 1/4			11B
		-19			MAKE FROM LDW280-10870			13 7/8 x 18 3/8			8A
		-17						18 x 28 1/4			5D
		-15						10 3/4 x 24 3/4			7C
		-13						20 3/4 x 33 7/8			4B
		LDW280-10772-11	E	SHIELD	MAKE FROM LDW280-10870			20 3/4 x 31 1/4	NONE	NONE	11B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10772	G
SCALE NONE		SHEET 1.00	

ENG 77.2 7-65

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10772-60	E	ANGLE	AL ALLOY SH	QQ-A-250/5	2024-T3	.020 X 3 X7	NONE	NOTE5	C2
								-59						.020 X 3 X7		NOTE5	C2
								-58						.020 X 3 X9		NOTE7	C7
								-57						.020 X 3 X9			C7
								-56						.020X2X8			G7
								-55		ANGLE	AL ALLOY SH	QQ-A-250/5	2024-T3	.020X2X8		NOTE7	G7
								LDW280-10772-53	E	SHIELD	AL ALLOY FOIL	QQ-A-430	5056-H191	.004X14X19	NONE	NOTE5	A8

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

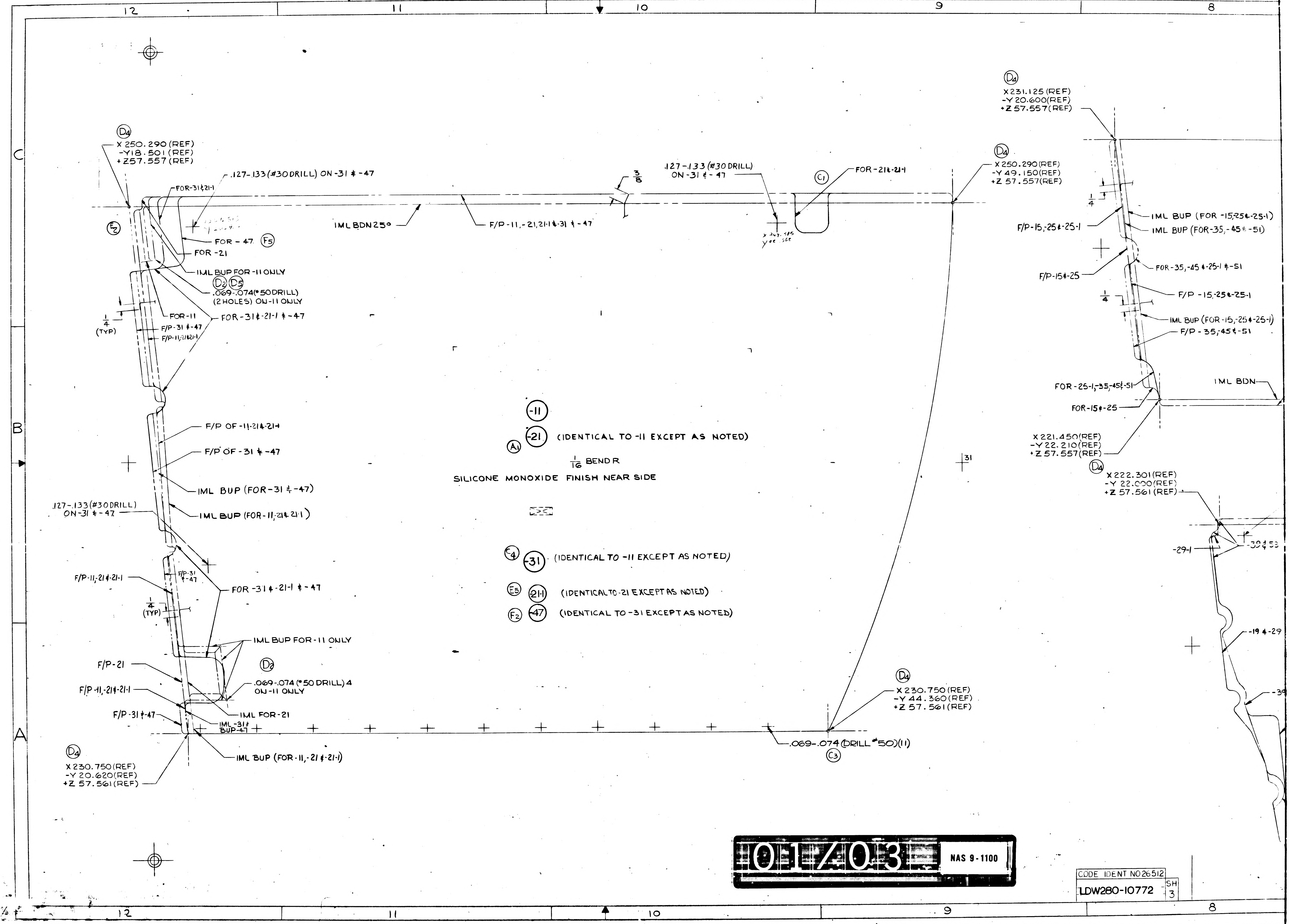
SIZE	CODE IDENT NO.		
B	26512	LDW280-10772	G
SCALE NONE		SHEET 201	

G

ENG 77.2 7-65

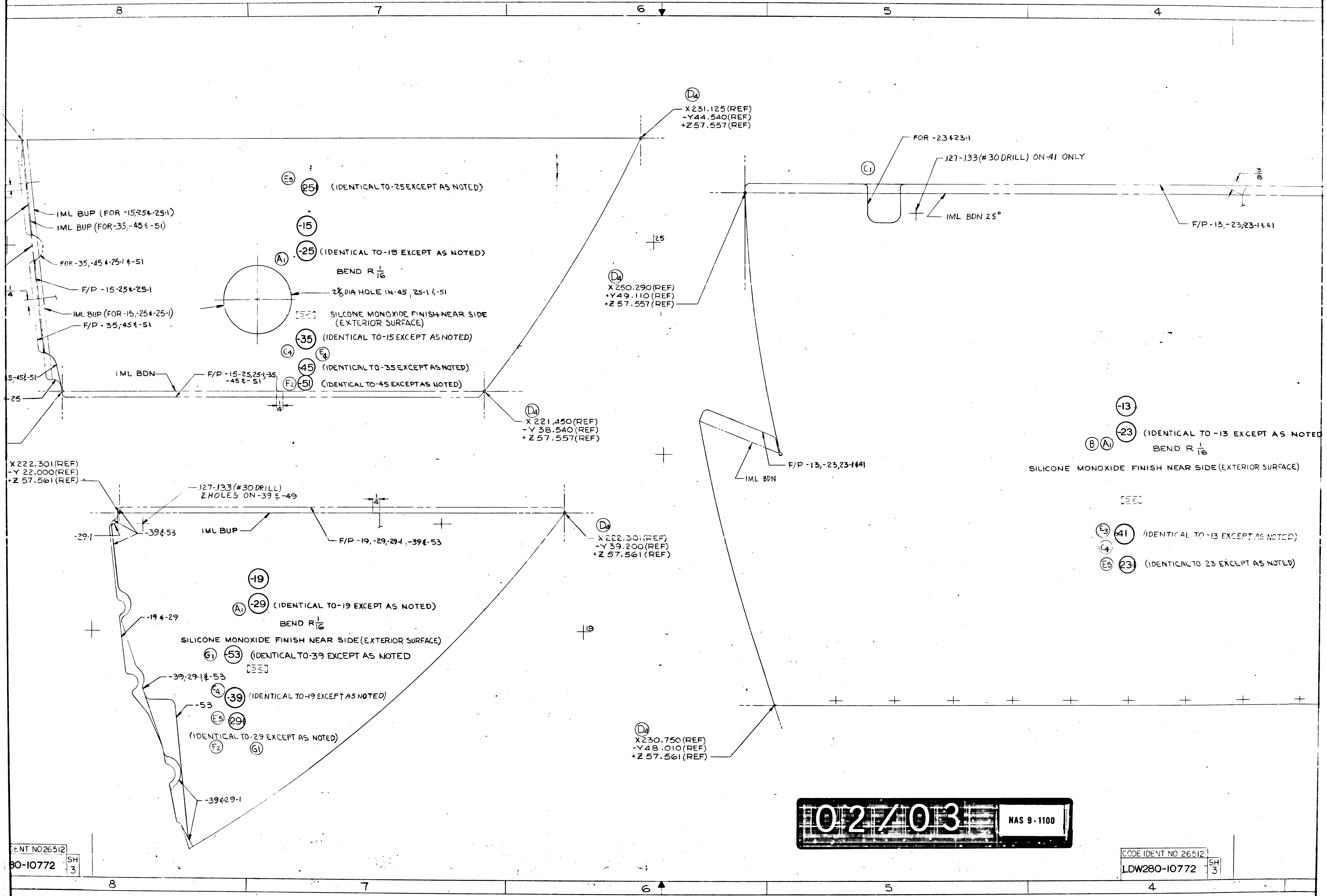
01

NAS 9-1100


12
11
10
9
8
C
B
A
D4
X 250.290 (REF)
-Y18.501 (REF)
+Z57.557 (REF)
.127-.133 (#30 DRILL) ON -31 & -47
FOR-31&21-1
E2
FOR - 47
F5
FOR -21
IML BUP FOR -11 ONLY
D2 D5
.069-.074 (#50 DRILL)
(2 HOLES) ON -11 ONLY
FOR-11
FOR-31&-21-1 & -47
1/4
(TYP)
F/P-31 & -47
F/P-11,-21&21-1
IML BDN 25°
F/P-11,-21,21-1&-31 & -47
3/8
.127-.133 (#30 DRILL)
ON -31 & -47
C1
FOR -21&-21-1
D4
X 250.290 (REF)
-Y 49.150 (REF)
+Z 57.557 (REF)
F/P OF -11,-21&-21-1
F/P OF -31 & -47
IML BUP (FOR-31 & -47)
IML BUP (FOR-11,-21&21-1)
.127-.133 (#30 DRILL)
ON-31 & -47
F/P-11,-21&-21-1
F/P-31 & -47
FOR -31 & -21-1 & -47
1/4
(TYP)
IML BUP FOR -11 ONLY
D2
.069-.074 (#50 DRILL) 4
ON -11 ONLY
F/P-21
F/P-11,-21&-21-1
F/P-31&-47
IML FOR -21
IML-31&
BUP-47
IML BUP (FOR-11,-21&-21-1)
D4
X 230.750 (REF)
-Y 20.620 (REF)
+Z 57.561 (REF)
-11
A1
-21 (IDENTICAL TO -11 EXCEPT AS NOTED)
1/16 BEND R
SILICONE MONOXIDE FINISH NEAR SIDE
C4
-31 (IDENTICAL TO -11 EXCEPT AS NOTED)
E5
21-1 (IDENTICAL TO -21 EXCEPT AS NOTED)
F2
-47 (IDENTICAL TO -31 EXCEPT AS NOTED)
D4
X 230.750 (REF)
-Y 44.360 (REF)
+Z 57.561 (REF)
.069-.074 (DRILL #50)(11)
C3
31
D4
X 231.125 (REF)
-Y 20.600 (REF)
+Z 57.557 (REF)
1/4
IML BUP (FOR -15,-25&-25-1)
IML BUP (FOR-35,-45&-51)
F/P-15,-25&-25-1
F/P-15&-25
FOR-35,-45&-25-1&-51
1/4
F/P -15,-25&-25-1
IML BUP (FOR -15,-25&-25-1)
F/P - 35,-45&-51
IML BDN
FOR -25-1,-35,-45&-51
FOR-15&-25
X 221.450 (REF)
-Y 22.210 (REF)
+Z 57.557 (REF)
D4
X 222.301 (REF)
-Y 22.000 (REF)
+Z 57.561 (REF)
-29-1
-39&53
-19&-29
-39

01/03 NAS 9-1100

CODE IDENT NO 26512
LDW280-10772 SH 3


8
7
6
5
4
D4
X 231.125 (REF)
-Y 44.540 (REF)
+Z 57.557 (REF)
E5
-25-1 (IDENTICAL TO -25 EXCEPT AS NOTED)
-15
A1
-25 (IDENTICAL TO -15 EXCEPT AS NOTED)
BEND R 1/16
2 3/8 DIA HOLE IN -45, 25-1 & -51
SILICONE MONOXIDE FINISH NEAR SIDE (EXTERIOR SURFACE)
-35 (IDENTICAL TO -15 EXCEPT AS NOTED)
C4
E4
-45 (IDENTICAL TO -35 EXCEPT AS NOTED)
F2
-51 (IDENTICAL TO -45 EXCEPT AS NOTED)
IML BUP (FOR -15, 25 & -25-1)
IML BUP (FOR -35, -45 & -51)
FOR -35, -45 & -25-1 & -51
F/P -15, -25 & -25-1
1/4
IML BUP (FOR -15, -25 & -25-1)
F/P -35, -45 & -51
-35, -45 & -51
-25
IML BDN
F/P -15 -25, 25-1, -35, -45 & -51
1/4
D4
X 221.450 (REF)
-Y 38.540 (REF)
+Z 57.557 (REF)
D4
X 250.290 (REF)
+Y 49.110 (REF)
+Z 57.557 (REF)
25
FOR -23 & 23-1
C1
.127-.133 (#30 DRILL) ON -41 ONLY
3/8
IML BDN 25°
F/P -13, -23, 23-1 & 41
F/P -13, -23, 23-1 & 41
IML BDN
-13
B
A1
-23 (IDENTICAL TO -13 EXCEPT AS NOTED)
BEND R 1/16
SILICONE MONOXIDE FINISH NEAR SIDE (EXTERIOR SURFACE)
E3
-41 (IDENTICAL TO -13 EXCEPT AS NOTED)
C4
E5
-23-1 (IDENTICAL TO 23 EXCEPT AS NOTED)
X 222.301 (REF)
-Y 22.000 (REF)
+Z 57.561 (REF)
.127-.133 (#30 DRILL)
2 HOLES ON -39 & -49
1/4
-29-1
-39 & -53
IML BUP
F/P -19, -29, -29-1, -39 & -53
D4
X 222.301 (REF)
-Y 39.200 (REF)
+Z 57.561 (REF)
-19
A1
-29 (IDENTICAL TO -19 EXCEPT AS NOTED)
BEND R 1/16
-19 & -29
19
SILICONE MONOXIDE FINISH NEAR SIDE (EXTERIOR SURFACE)
G1
-53 (IDENTICAL TO -39 EXCEPT AS NOTED
-39, -29-1 & -53
C4
-39 (IDENTICAL TO -19 EXCEPT AS NOTED)
-53
E5
-29-1
(IDENTICAL TO -29 EXCEPT AS NOTED)
F2
G1
-39 & -29-1
D4
X 230.750 (REF)
-Y 48.010 (REF)
+Z 57.561 (REF)

CODE IDENT NO 26512
80-10772 SH 3

02/03 NAS 9-1100

CODE IDENT NO 26512
LDW280-10772 SH 3

TP/ww

NOTES:

1 NO TOOLING HOLES PERMITTED IN PARTS.

2. MATERIAL, FINISHES, HANDLING & PERMISSIBLE DEVIATIONS OF LM ASCENT STAGE THERMAL SHIELD SKINS PER LPC280-16

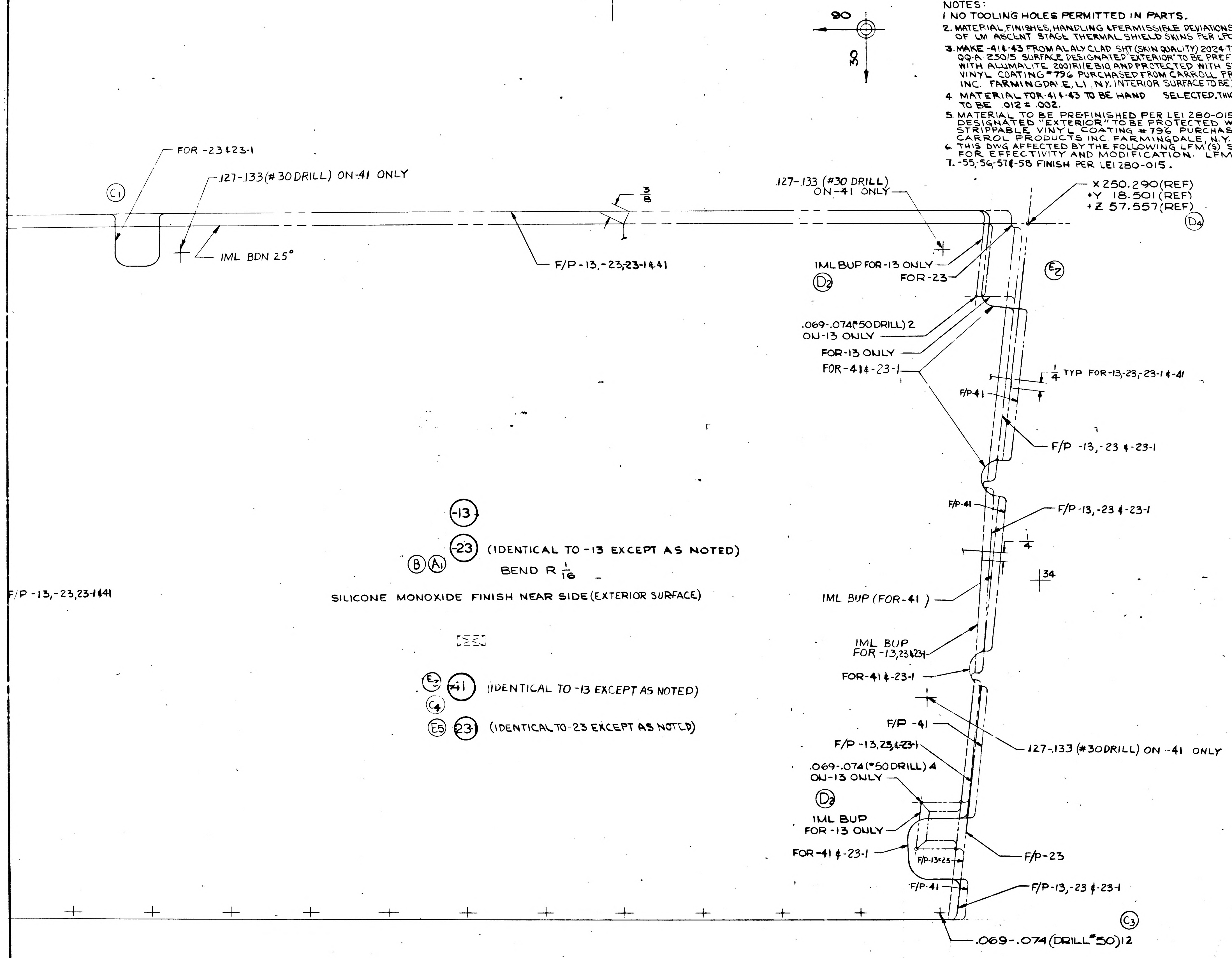
3. MAKE -41 & -43 FROM AL ALY CLAD SHT (SKIN QUALITY) 2024-T3 QQ-A-250/5 SURFACE DESIGNATED "EXTERIOR" TO BE PREFINISHED WITH ALUMALITE 2001R1/E B10, AND PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROLL PRODUCTS INC. FARMINGDALE, L.I., N.Y. INTERIOR SURFACE TO BE FINISH #76 (LSP14-9010)

4 MATERIAL FOR -41 & -43 TO BE HAND SELECTED. THICKNESS TO BE .012 ± .002.

5. MATERIAL TO BE PRE-FINISHED PER LEI 280-015. SURFACE DESIGNATED "EXTERIOR" TO BE PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROL PRODUCTS INC. FARMINGDALE, N.Y.

6. THIS DWG AFFECTED BY THE FOLLOWING LFM(S) SEE LFM FOR EFFECTIVITY AND MODIFICATION. LFM 140.

7. -55, -56, -57 & -58 FINISH PER LEI 280-015.


5
4
3
2
90
30
X 250.290 (REF)
+Y 18.501 (REF)
+Z 57.557 (REF)
D4
FOR -23 & 23-1
.127-.133 (#30 DRILL) ON -41 ONLY
C1
IML BDN 25°
3/8
F/P -13, -23, 23-1 & 41
.127-.133 (#30 DRILL) ON -41 ONLY
IML BUP FOR -13 ONLY
FOR -23
D2
E2
.069-.074 (#50 DRILL) 2 ON -13 ONLY
FOR -13 ONLY
FOR -41 & -23-1
1/4 TYP FOR -13, -23, -23-1 & -41
F/P -41
F/P -13, -23 & -23-1
F/P -41
F/P -13, -23 & -23-1
1/4
34
-13
B A1 -23 (IDENTICAL TO -13 EXCEPT AS NOTED)
BEND R 1/16
F/P -13, -23, 23-1 & 41
SILICONE MONOXIDE FINISH NEAR SIDE (EXTERIOR SURFACE)
IML BUP (FOR -41)
IML BUP FOR -13, 23 & 23-1
FOR -41 & -23-1
E3 -41 (IDENTICAL TO -13 EXCEPT AS NOTED)
C4
E5 -23-1 (IDENTICAL TO -23 EXCEPT AS NOTED)
F/P -41
F/P -13, 23 & 23-1
.127-.133 (#30 DRILL) ON -41 ONLY
.069-.074 (#50 DRILL) 4 ON -13 ONLY
D2
IML BUP FOR -13 ONLY
FOR -41 & -23-1
F/P -13 & 23
F/P -23
F/P -41
F/P -13, -23 & -23-1
C3
.069-.074 (DRILL #50) 12

03/03 NAS 9-1100

CODE IDENT NO 26512
LDW280-10772 SH 3

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 34 X 118

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 129) = 32.5 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 8.5 SQ. FT.

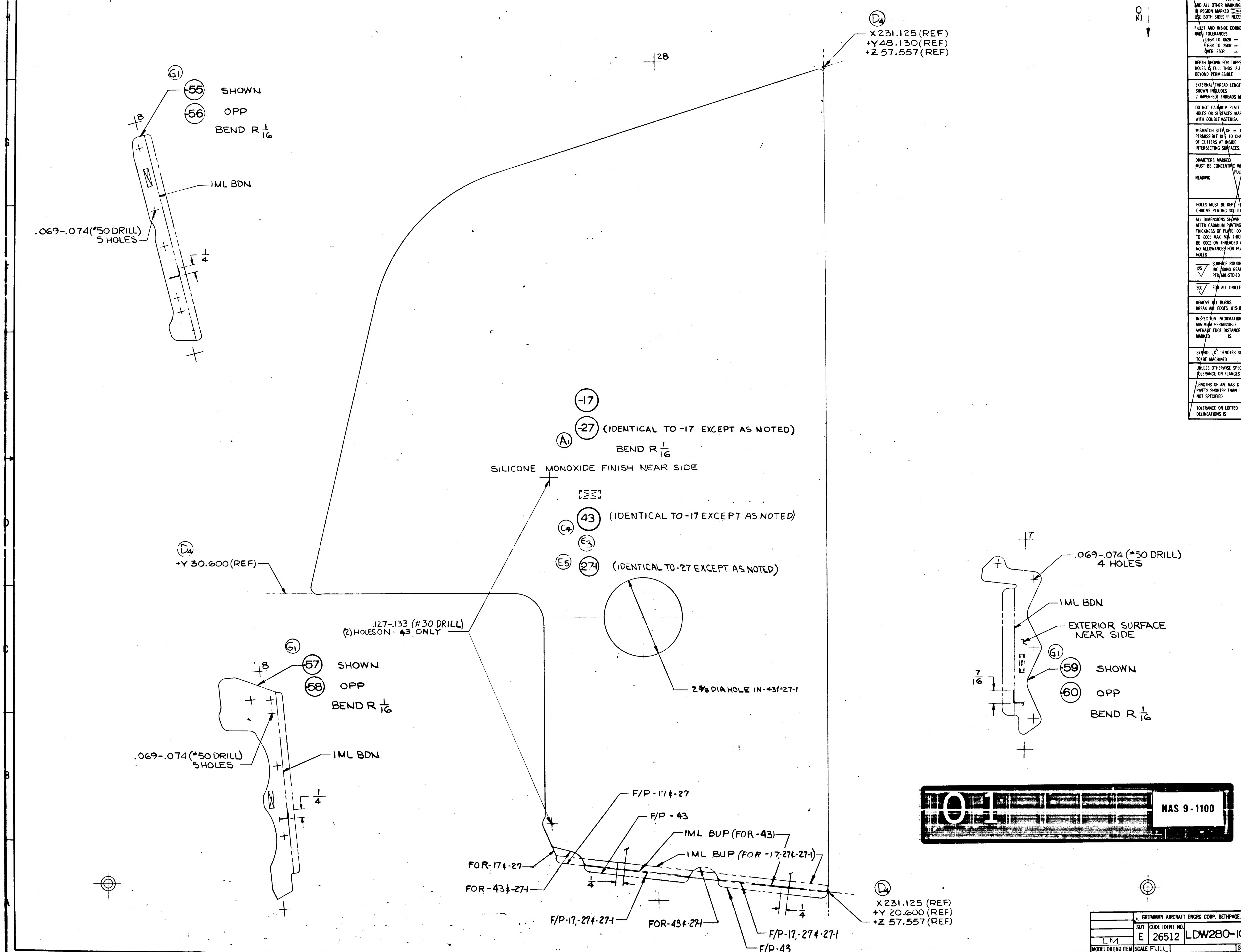
PRINT TRIM LINE

C
B
A
1

LDW280-10772 G
LDW280-10772 G

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK
LM
MODEL OR END ITEM
SIZE J
CODE IDENT NO. 26512
LDW280-10772 G
SCALE FULL
SHEET 3.00

1 FOR PHOTO REPRODUCTION B K2
3 FR.


35
O
D4
X 231.125 (REF)
+Y 48.130 (REF)
+Z 57.557 (REF)
28
G1
-55 SHOWN
-56 OPP
BEND R 1/16
8
IML BDN
.069-.074 (#50 DRILL)
5 HOLES
1/4
-17
-27 (IDENTICAL TO -17 EXCEPT AS NOTED)
A1
BEND R 1/16
SILICONE MONOXIDE FINISH NEAR SIDE
43 (IDENTICAL TO -17 EXCEPT AS NOTED)
C4
E3
E5
27-1 (IDENTICAL TO -27 EXCEPT AS NOTED)
D4
+Y 30.600 (REF)
.127-.133 (#30 DRILL)
(2) HOLES ON -43 ONLY
2 3/8 DIA HOLE IN -43 & -27-1
G1
-57 SHOWN
-58 OPP
BEND R 1/16
8
.069-.074 (#50 DRILL)
5 HOLES
IML BDN
1/4
F/P -17 & -27
F/P - 43
IML BUP (FOR -43)
IML BUP (FOR -17, 27 & -27-1)
FOR -17 & -27
FOR -43 & -27-1
1/4
F/P -17, -27 & -27-1
FOR -43 & -27-1
F/P -17, -27 & -27-1
F/P -43
1/4
D4
X 231.125 (REF)
+Y 20.600 (REF)
+Z 57.557 (REF)
7
.069-.074 (#50 DRILL)
4 HOLES
IML BDN
EXTERIOR SURFACE
NEAR SIDE
G1
-59 SHOWN
-60 OPP
BEND R 1/16
7/16
01
NAS 9-1100

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

LDW280-10772 G

LDW280-10772 G

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

LM	SIZE E	CODE IDENT NO. 26512	LDW280-10772	G
MODEL OR END ITEM	SCALE FULL		SHEET 4.00	

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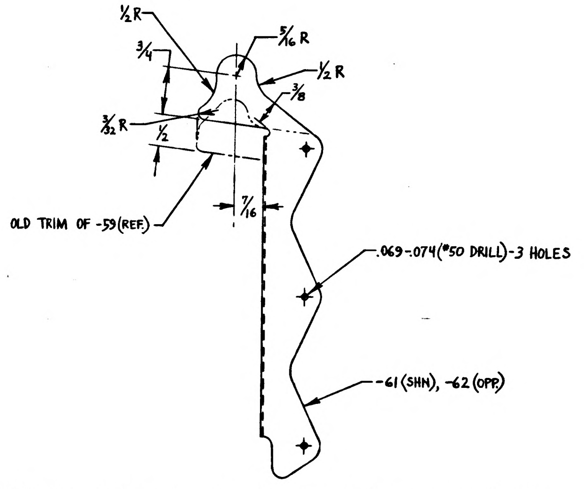
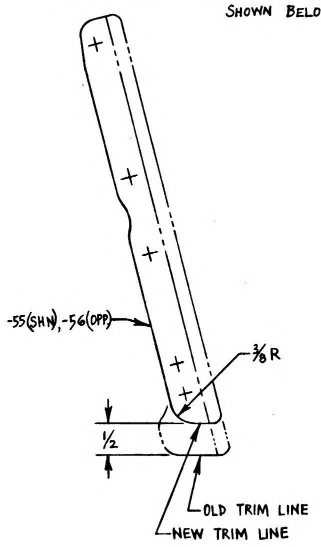

1/2 R
5/16 R
3/4
1/2 R
3/8
3/32 R
1/2
7/16
OLD TRIM OF -59 (REF.)
.069-.074 (#50 DRILL)-3 HOLES
-61 (SHN), -62 (OPP.)

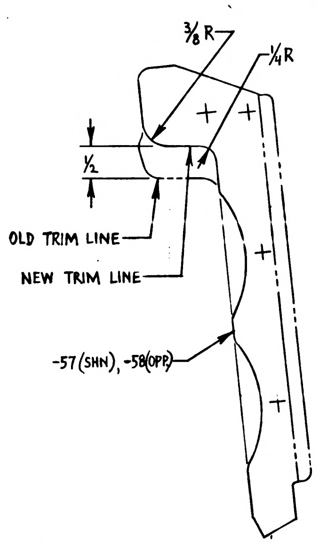
In F/D & B/M ADD -61 & -62 ANGLE, SAME AS -59 & -60 RESP. EXCEPT
AS SHOWN ABOVE. REMOVE -59 & -60.

In M/B FOR -61 & -62 ADD: N/A LDW280-54241, LM-5(35), 1 EA. REQD./MOD.
N/A LDW280-56241, LM-6(36) THRU LM-15(45), 1 EA. REQD./MOD.

In M/B REMOVE -59 & -60.

IN F/D REVISE TRIM OF -55 & -56 AS SHOWN BELOW


-55(SHN), -56(OPP)
3/8 R
1/2
OLD TRIM LINE
NEW TRIM LINE


3/8 R
1/4 R
1/2
OLD TRIM LINE
NEW TRIM LINE
-57(SHN), -58(OPP)

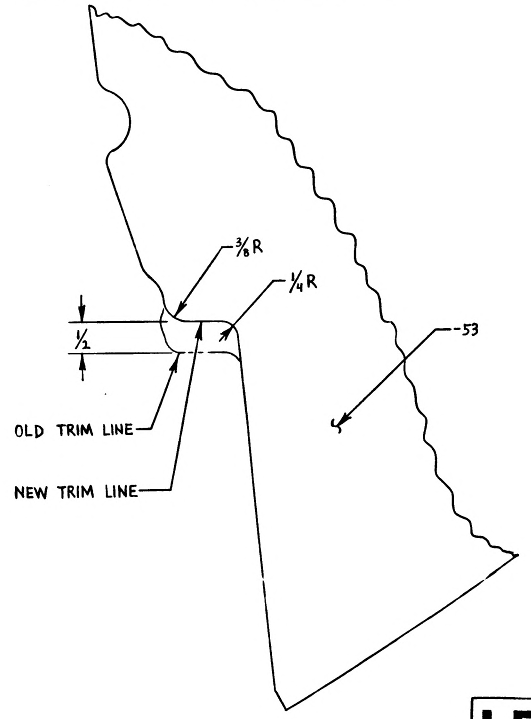
IN F/D REVISE TRIM OF -57 & -58 AS SHOWN ABOVE

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10772
EO NO. H1
CONTROL INFO NO. LDW280B8072

IN F/D, REVISE TRIM OF -53 AS SHOWN BELOW.


3/8 R
1/4 R
1/2
OLD TRIM LINE
NEW TRIM LINE
-53

LFM

DO NOT ADD ABOVE DIMS. TO DWG.

DETAIL SPEC REQ
CL II ENGRG CHG
CL I ENGRG CHG ✓ LCD 3999 PKG. 10
(5)

REASON FOR EO: THERMAL SHIELD CHANGE TO ACCOMMODATE NEW INTERSTAGE FITTING EXPLOSIVE BOLT COVER 6/21/69

DESCRIPTION OF EO: IN F/D REVISED TRIM OF -53, -55, -56, -57 & -58
IN F/D, B/M & M/B ADDED -61 & -62, REMOVED -59 & -60

GAEC EO RELEASE: 6/21 JK

MODEL	EI PRODUCING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM# 448	LM-5(35) &	LM-6(36)
LM		LM-7(37) THRU LM-15(45)	

DRAWING CHANGE REQD: ✓ REVISE DWG / RECORD EO
DISPOSITION OF PARTS: -53, -55, -56, -57, -58 REWORK; -59, -60 SCRAP
APPROVED BY / DATE: VDI 6/21/69; THERMO; RELIAB. GROUP; GROUP LEADER 6/21/69; STRESS GROUP 6/21/69; KSC 6-21-69; PROJ ENGRG AK 6/21/69; 6/21/69

PRIORITY: C
DRAWING TITLE: SHIELD ASCENT STAGE-CABIN FRONT FACE LOWER PANEL OUTBD.
DRAWING NO. LDW280-10772
EO NO. H1

6-23-69
ISSUED BY F. SHANLEY 7033 SECTION VEH. DESIGN INT. GROUP NO. 335 PL 25

ENG 32.1 REV 3-65

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 1824

CONTROL INFO NO. LDW280B9664

IN MODEL BLOCK DELETE THE QTY'S ** FOR LM-10(40) THRU LM-14(44) EFF. ON THE FOLLOWING DWG'S, FOR DASH NOS *

DWG. NO	DASH NOS *	QTY'S **	CHG. NO	TITLE	NEXT ASSY
LDW280-10772	-53, -55, -57, -61	ALL	H2	SEE DWG	LDW280-56241
-11129	-29	ALL	F5		-56241
-11745	-31, -35, -41	ALL	C2		-56241
-11692	-17	1 OF 4	B2		-53178
-11693	-13	ALL	A3		
-11694	-15	ALL	A2		
-11696	-11	ALL	A4		
-11696	-13	2 OF 4			
-11696	-17, -19	ALL			
LDW280-11697	-11	ALL	B2	SEE DWG	LDW280-53178

DETAIL SPEC REQ ☐ | CL II ENGRG CHG ☐ | CL I ENGRG CHG ☑ LCD 3994 PKG 13

(5)

REASON FOR EO: PARTS NOT REQD FOR LM-10(40) THRU LM-14(44)

DESCRIPTION OF EO: IN M/B DELETED THE QTY'S ** FOR LM-10(40) THRU LM-14(44) EFF FOR DASH NOS *

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM-10(40)	
		THRU	
		LM-14(44)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK | SCRAP ✓

APPROVED BY								
DATE	1-13-70			1-12-70	1/16/70		1/16/70	1/27/70
	YDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C

DRAWING TITLE: SEE DWG

DRAWING NO.: LEO 280

EO NO.: 1824

013070

ISSUED BY J. LOWNE 1-12-70 X-86048

SECTION VDI

GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-10773

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28241	LEM-2(32)	1 EA
LEM	LDW280-28241	LEM-1(31)	1 EA
LEM	LDW280-28241	LTA-8(18)	1 EA
PART NO. LDW280-10773-11,-12,-13,-14,-15,-16,-17,-18,-19 & -20		GAEC SCH NO. 30-	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00						
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO			
LAST DASH NO. USED	-20	PRIM NO.	LE(001)		
		215	MP12		JR 4-23

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	LUNDSTEN 4-1966	RELIABILITY	
LAYOUT BY	SHANLEY		
CHECKED BY	4-21-66		
GR LEADER	J Lusatere 4/22		
VEH DES INT	4/22		
STRUCTURES	4/22	PROJ ENGR	5-2-66
STRUCTURES	4/23	REL GROUP	E Caramanica 5-2-66
WEIGHTS	4-29		

Ⓡ GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SHIELD-
ASCENT STAGE CABIN
FRONT FACE LOWER THERMAL

SIZE	CODE IDENT NO.	
B	26512	LDW280-10773
SCALE	NONE	SHEET 1.00 OF 3

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10773-20	E	SHIELD	AL ALLOY SH	QQ-A-355	2024-T3	.016x5¼x7¾	CM	88	
		-19						.016x5¼x7¾			
		-18						.016x5x7½			
		-17						.016x5x7½			
		-16						.016x5x8¼			
		-15						.016x5x8¼			
		-14						.016x5x8½			
		-13						.016x5x8½			
		-12						.016x5¼x8¼			
		LDW280-10773-11	E	SHIELD	AL ALLOY SH	QQ-A-355	2024-T3	.016x5¼x8¼	CM	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
CM	CHEM-MILLING	LSP14-26100
88	ANODIZE	LSP14-9030

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10773

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

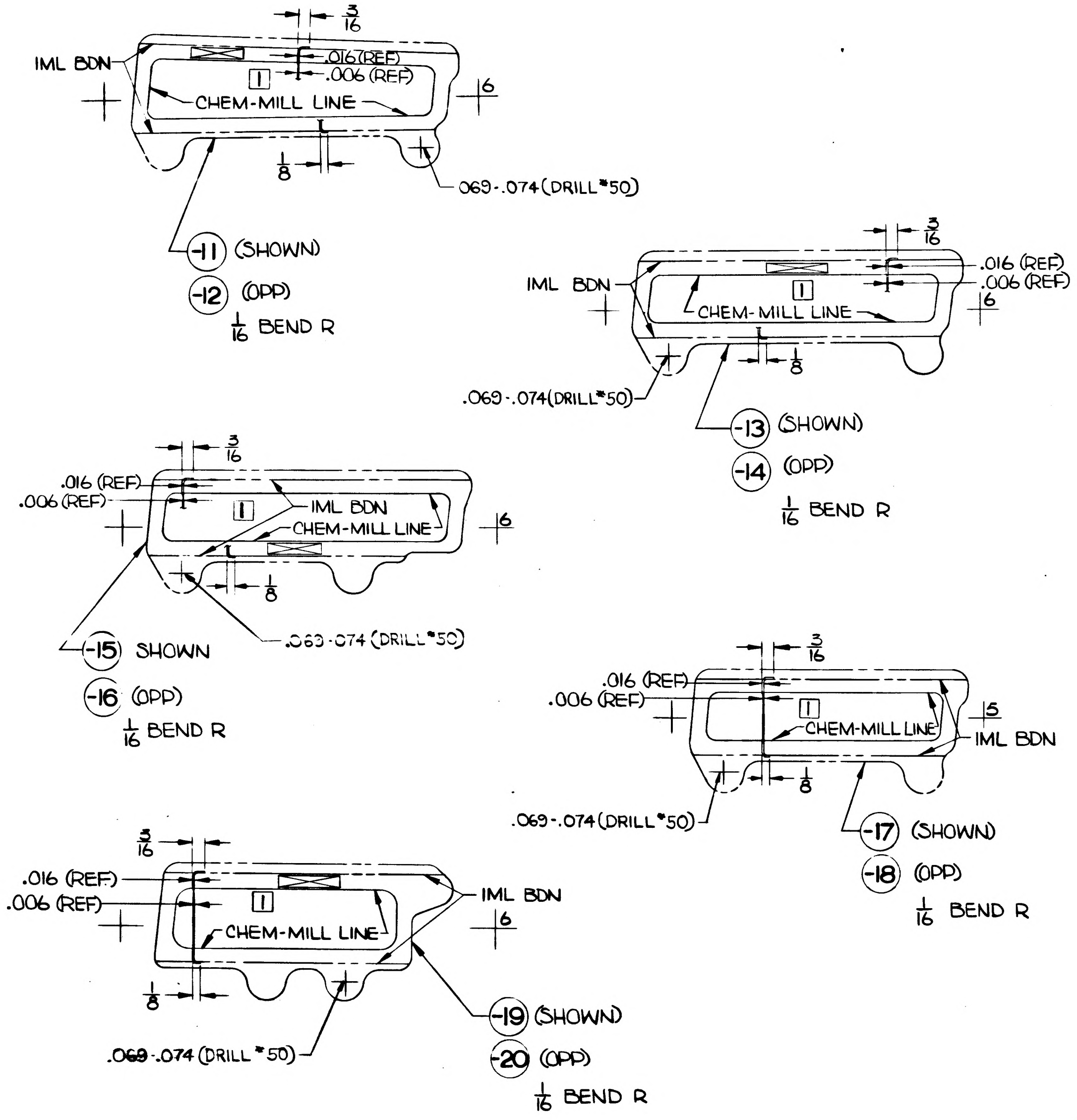
01

NAS 9-1100

LDW280-10773

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.



3/16
.016 (REF)
.006 (REF)
IML BDN
CHEM-MILL LINE
1/16
1/8
.069-.074 (DRILL #50)
-11 (SHOWN)
-12 (OPP)
1/16 BEND R
3/16
.016 (REF)
.006 (REF)
IML BDN
CHEM-MILL LINE
1/16
1/8
.069-.074 (DRILL #50)
-13 (SHOWN)
-14 (OPP)
1/16 BEND R
3/16
.016 (REF)
.006 (REF)
IML BDN
CHEM-MILL LINE
1/16
1/8
.069-.074 (DRILL #50)
-15 SHOWN
-16 (OPP)
1/16 BEND R
3/16
.016 (REF)
.006 (REF)
CHEM-MILL LINE
1/5
IML BDN
1/8
.069-.074 (DRILL #50)
-17 (SHOWN)
-18 (OPP)
1/16 BEND R
3/16
.016 (REF)
.006 (REF)
IML BDN
CHEM-MILL LINE
1/6
1/8
.069-.074 (DRILL #50)
-19 (SHOWN)
-20 (OPP)
1/16 BEND R

LDW280-10773-11, -12, -13, -14
-15, -16, -17, -18, -19, -20

CHEM-MILL LINE TOLERANCE:
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	.006 ±.002	.010
☐		
☐		

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

SIZE D	CODE IDENT NO. 26512	LDW280-10773	
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

FOR PHOTO REPRODUCTION

LDW280-10773

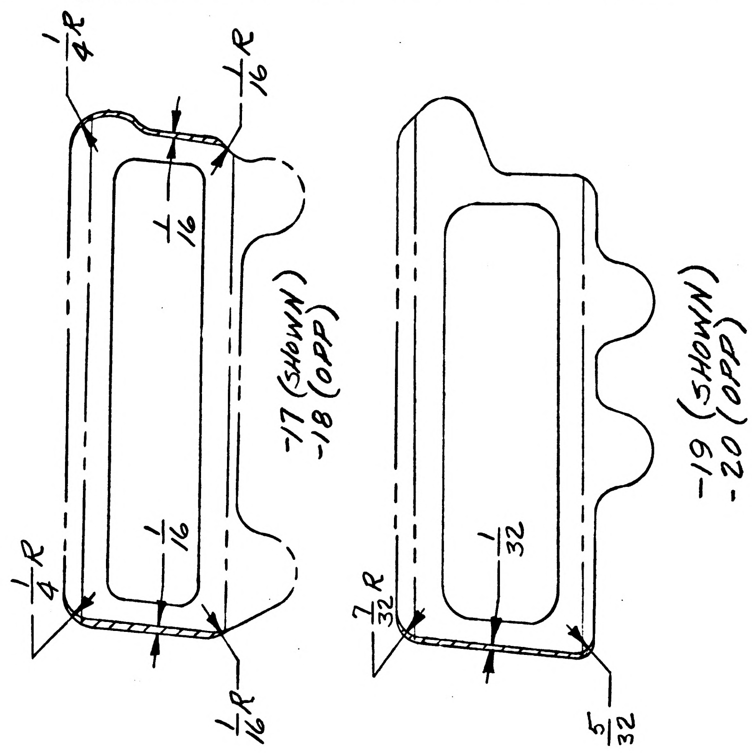
01

NAS 9-1100

ENG 32.2 REV 3-65 LIAISON ENGINEERING #5 *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

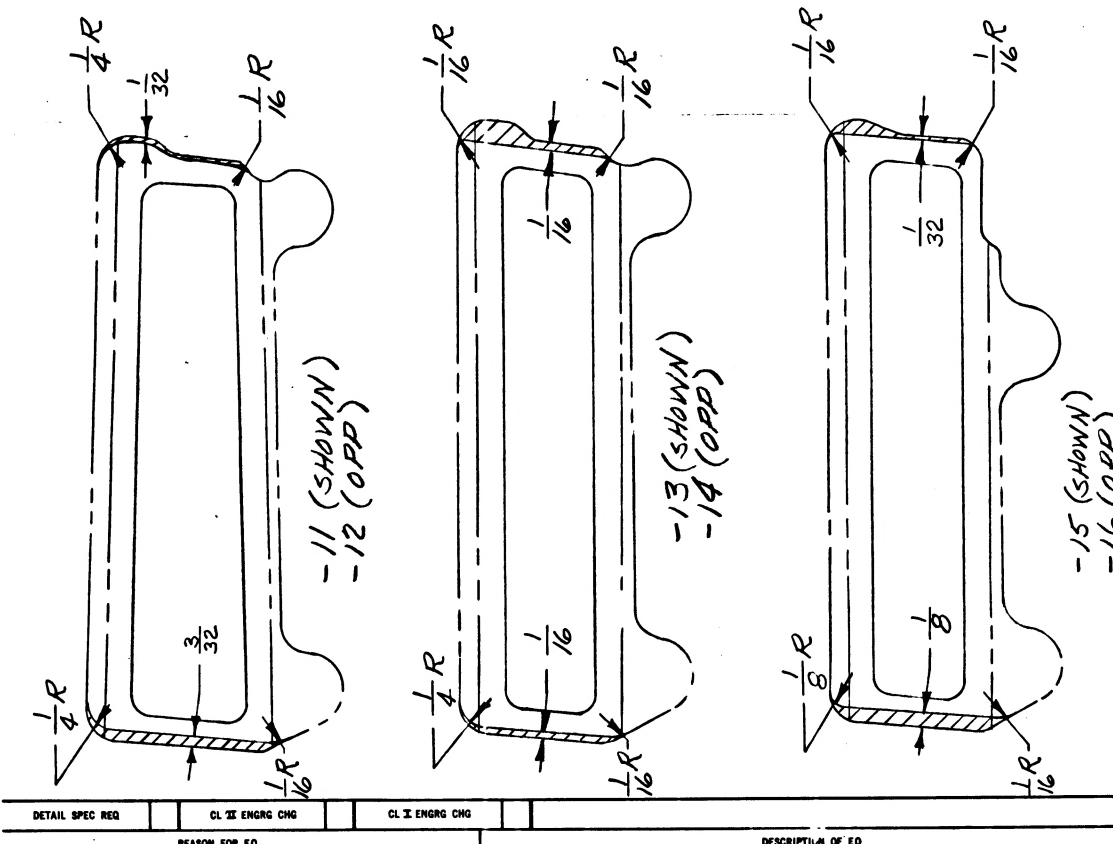
DWG. NO. LDW280-10773 | EO NO. A1
CONTROL INFO NO. LM-5-9111



1/4 R
1/16 R
1/16
1/16
-17 (SHOWN)
-18 (OPP)
7/32 R
1/32
5/32
-19 (SHOWN)
-20 (OPP)

TRIM -11 THRU -20 AS SHOWN.
PARTS ARE TO BE LOFTED,
DIMENSIONS ARE FOR REF.
ONLY & ARE NOT TO APPEAR
ON FINAL REVISED DWG.

REWORK NOTE: BRUSH ALODINE TRIMMED AREAS



1/4 R
1/32
1/16 R
3/32
-11 (SHOWN)
-12 (OPP)
1/16 R
1/16
1/16
1/4 R
-13 (SHOWN)
-14 (OPP)
1/16 R
1/16 R
1/32
1/8
1/8 R
-15 (SHOWN)
-16 (OPP)
1/16 R

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
TRIMMING REQ'D TO FACILITATE INSTL.	TRIMMED -11 THRU -20	FR

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8(18)	
		LM-1(31)	
		LM-2(32)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
✓		✓		DATE	9-23-66	10-4	10/6 THERMO	~	9-15-66	9-15-66	9-19	9-15-66
REVISE DWG	RECORD EO	REWORK	SCRAP	9-15-66	V.D.I.	~~SUPPORT~~ W.S.	~~TEST GROUP~~	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

Approved by: V.J.I., RMC

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SHIELD - A/S CABIN FRONT FACE LOWER THERMAL	LDW280-10773	A1

ISSUED BY LIAISON - J. McGILL X-6452 SECTION VDI - PUSATERI GROUP NO.____ PL 35

01

NAS 9-1100

ENG 32.1 REV 3-65 LIAISON ENGINEERING #5

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER *

DWG. NO LDW280-10773	EO NO. AZ
CONTROL INFO NO. LM-5-9130	

THIS EO CANCELS EO A1

5

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☐

REASON FOR EO: TRIMMING OF DETAILS TO BE ACCOMPLISHED ON INSTL DWG PER MIKE SALVADOR - VDI.

DESCRIPTION OF EO: CANCELLED EO A1

Ⓡ GAECC EO RELEASE: VE WB

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8 (18)	
		LM-1 (31)	
		LM-2 (32)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓		NOT	REQ'D
REVISE DWG	RECORD EO	REWORK	SCRAP

APPROVED BY		SAK	V.J.I.	~		CH	RMC (EO)	
DATE	9-23-66	10-4	10/6 THERMO	~		9-19-66	9-21	9-19-66
9-19-66	V.D.I.	~~SUPPORT~~ WB	~~RELIAB. GROUP~~	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SHIELD - A/S CABIN FRONT FACE LOWER THERMAL	LDW280-10773	AZ

ISSUED BY LIAISON - J. McGILL X-6452 SECTION VDI - PUSATERI GROUP NO.______ PL 35

01

NAS 9-1100

ENG 32 · REV 3 65

B

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO-280
EO NO. 500
CONTROL INFO NO LDW 280A-5771

(ADD) NOTE, "*. MATERIAL, FINISHES, HANDLING AND PERMISSIBLE DEVIATIONS PER LPC-280-16", TO THE FOLLOWING DRAWINGS:

DRAWING NUMBER	TITLE	EFFECTIVITY	CHANGE NUMBER
LDW280-10928 ✓	SEE DWG	LTA-8	B2
-11345 ✓			B2
-28174 ✓			G6 3/8 C3
-28182 ✓			B6
-28392 ✓		LTA-8	A9
-10631 ✓		LTA-8, LM-1 & -2	C3
-10645 ✓			B3
-10773 ✓			A3
-10774 ✓			C5
-11294 ✓			B1
-11308 ✓			A3
-28096 ✓			D4
-28178 ✓			G6
-28179 ✓			A3
-28279 ✓			D8
-28495			B2
-28496			C7
-28347			D6
-28499			A10
-28875			B6
-28241		LTA-8, LM-1 & -2	D1
LDW280-28176	SEE DWG	LTA-8, LM-1, -2 & -3	C1

NOTE:
* = USE NEXT AVAILABLE №.

DETAIL SPEC REQ ✓ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: LPC'S OMITTED ON DWG

DESCRIPTION OF EO: ADDED NOTE *

GAEC EO RELEASE C 3
JK 3/8/67

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOTED	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK ✓ SCRAP
APPROVED BY Jap
DATE 3/2/67
1 VDI THERMO RELIAB. GROUP
GROUP LEADER Z.I.P. 3/2/67
STRESS GROUP JV 3/3/67
LIAISON ENGRG
PROJ ENGRG Dam 3/6/67 JPP 3/7/67

PRIORITY C
DRAWING TITLE NOTED
DRAWING NO. LEO-280
EO NO. 500

ISSUED BY JOHN K. LEE
SECTION VEH. DES. INT.
GROUP NO. 335 ~~335~~

01 NAS 9-1100

LDW280-10774 C

LFM

LFM-126	LDW280-28241	LTA-8(18)	1 EA
PART NO. LDW280-10774-21-1, -23-1 & -24-1			
LFM-126	LDW280-28241	LTA-8(18)	1 EA
LM	LDW280-28241	LM-2(32)	1 EA
LM	LDW280-28241	LM-1(31)	1 EA
LM	LDW280-28241	LTA-8(18)	1 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10774-15, -17 -19, -20, -25 & -26		GAEC SCH NO. 30-	

LM	LDW280-28241	LM-2(32)	1 EA
LM	LDW280-28241	LM-1(31)	1 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10774-11, -13 & -14		GAEC SCH NO.	

LM	LDW280-28241	LTA-8(10)	1 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10774-21, -23 & -24		GAEC SCH NO.	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	C	C	C		C				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	—	GRUMMAN REL INFO 6	
		PRIM NO.	X(001)
LAST DASH NO. USED	-26	215	MP-16C-6/5/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1/32
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 | LINE ITEM 1 | DOCUMENTATION TYPE II

DRAWN BY	M.H.MULLER 4/26/66	RELIABILITY	
LAYOUT BY	F. SHANLEY		
CHECKED BY	D.FASS 5-2-66		
GR LEADER	J. Pusatieri 5/3		
VEH DES INT	5/2		
STRUCTURES	5/5	PROJ ENGR	5-11
STRUCTURES	Hilderman 5/16	REL GROUP	Caramanico 5-16-66
WEIGHTS	5-11		

Ⓕ GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SHIELD
ASCENT STAGE CABIN FRONT FACE
LOWER PANEL OUTBOARD

SIZE	CODE IDENT NO.		
B	26512	LDW280-10774	C
SCALE NONE		SHEET 1.00 OF 4	

Ⓒ

REV. 'C' CDR. 5-22-69

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
A	1	1.00, 1.10, 2.00 & 3.00						E.O. A 1	ADDED SH 1.10, SH 1 OF 4 WAS 1 OF 3. REMOVED Ⓐ LDW280-10774-11, -13 & -14 FROM LTA-8. ADDED -21, -23 & -24	LTA-8		✓	NISBET 7/11/66		
B		1.00, 1.10, 2.00 & 3.00							IN F/D REVISED SHAPE OF -13, -14, -23 & -24. Ⓡ IN F/D, L/M & M/B ADDED -25, -26. Ⓑ E/R	LTA-8 LM-1 & -2	✓		SHANLEY 8-29-66		
C	1	1.10, 3.00	8D					E.O. C1	FOR -25 & -26, REVISED FLANGE ANGLE	LTA-8 LM-1 & -2	✓		K. EISELE 4-27-68		
	2	1.00, 1.10						LEO280-428	FOR -15 & -17 ADDED LM-3 THRU LM-15 EFFECTIVITY	LM-3 THRU LM-15	NOT	REQ'D			
	3							E.O. C3	E.O. C3 NOT ISSUED	NONE	NOT	REQ'D			
	4	1.00, 1.10						E.O. C4	FOR -15 & -17 REMOVED N/A LDW280-53241, LM-3 THRU LM-15	LM-3 THRU LM-15		✓			
	5	1.10, 3.00	4F		✓			LEO280-500	ADDED NOTE #5	LTA-8 LM-1 & -2	✓				
	6	1.10, 3.00	4F			✓		E.O. C6	FOR -23 & -24 ADDED NOTE # 6.	LTA-8	✓				
	7	1.00, 1.10 2.00, 3.00	6A	LFM 126		✓		LCD 1021-33 CCA 498 OK	ADDED 21-1, -23-1 & -24-1. ON -15, -17, -19, -20, -25 & -26 ADDED END ITEM LFM 126 REQ.	LTA-8	NOT	REQD			
	8	2.00					✓		IN B/M ON -15, -17, -25, -26 QQ-A-250/5 WAS QQ-A-250/4 (DWG CORRECTION) WCG	NOT REQD.	NOT	REQD			

CHG APPROVED LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY	THERMO
A							
B			ECB 8/31				
C	5/6/68	5/7/68	5/1/68				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10774	C Ⓒ
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10774-24-1	E	SHIELD	MAKE FROM LDW280-11310-13-4			5 X 5	NONE	NONE	
		LDW280-10774-23-1	E	SHIELD	MAKE FROM LDW 280-11310-13-4			5 X 5	NONE	NONE	
		LDW280-10774-21-1	E	SHIELD	MAKE FROM LDW 280-11310-13-4			10 X 14	NONE	NONE	
		LDW 280-10774-26	E	CLIP	AL ALLOY SH	QQ-A-250/5	SEE NOTE (1)	.020 x 1 3/4 x 1 7/8	NONE	NOTES 2&3	
		LDW280-10774-25	E	CLIP	AL ALLOY SH	QQ-A-250/5	SEE NOTE (1)	.020 x 1 3/4 x 1 7/8	NONE	NOTES 2&3	
		LDW280-10774-24	E	SHIELD	MAKE FROM LDW 280-11310			4 3/8 x 8 3/4	NONE	SEE NOTE 6	
		-23		SHIELD	MAKE FROM LDW 280-11310			4 3/8 x 8 3/4	NONE	SEE NOTE 6	
		-21		SHIELD	MAKE FROM LDW280-11310			10 1/4 x 13 3/4	NONE	NONE	
		-20		ANGLE	AL ALLOY SH	QQ-A-250/4	2024-T3	.020 x 1 3/4 x 13 1/4	NONE	76	
		-19				QQ-A-250/4	2024-T3	.020 x 1 3/4 x 13 1/4	NONE	76	
		-17				QQ-A-250/5	SEE NOTE (1)	.020 x 1 3/4 x 8 3/4	NONE	NOTES 2&3	
		-15		ANGLE	AL ALLOY SH	QQ-A-250/5	SEE NOTE (1)	.020 x 2 1/2 x 20 1/4	NONE	NOTES 2&3	
		-14		SHIELD	MAKE FROM LDW280-10870			4 3/8 x 8 3/4	NONE	NONE	
		-13		SHIELD	MAKE FROM LDW280-10870			4 3/8 x 8 3/4	NONE	NONE	
		LDW280-10774-11	E	SHIELD	MAKE FROM LDW280-10870			10 1/4 x 13 3/4	NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

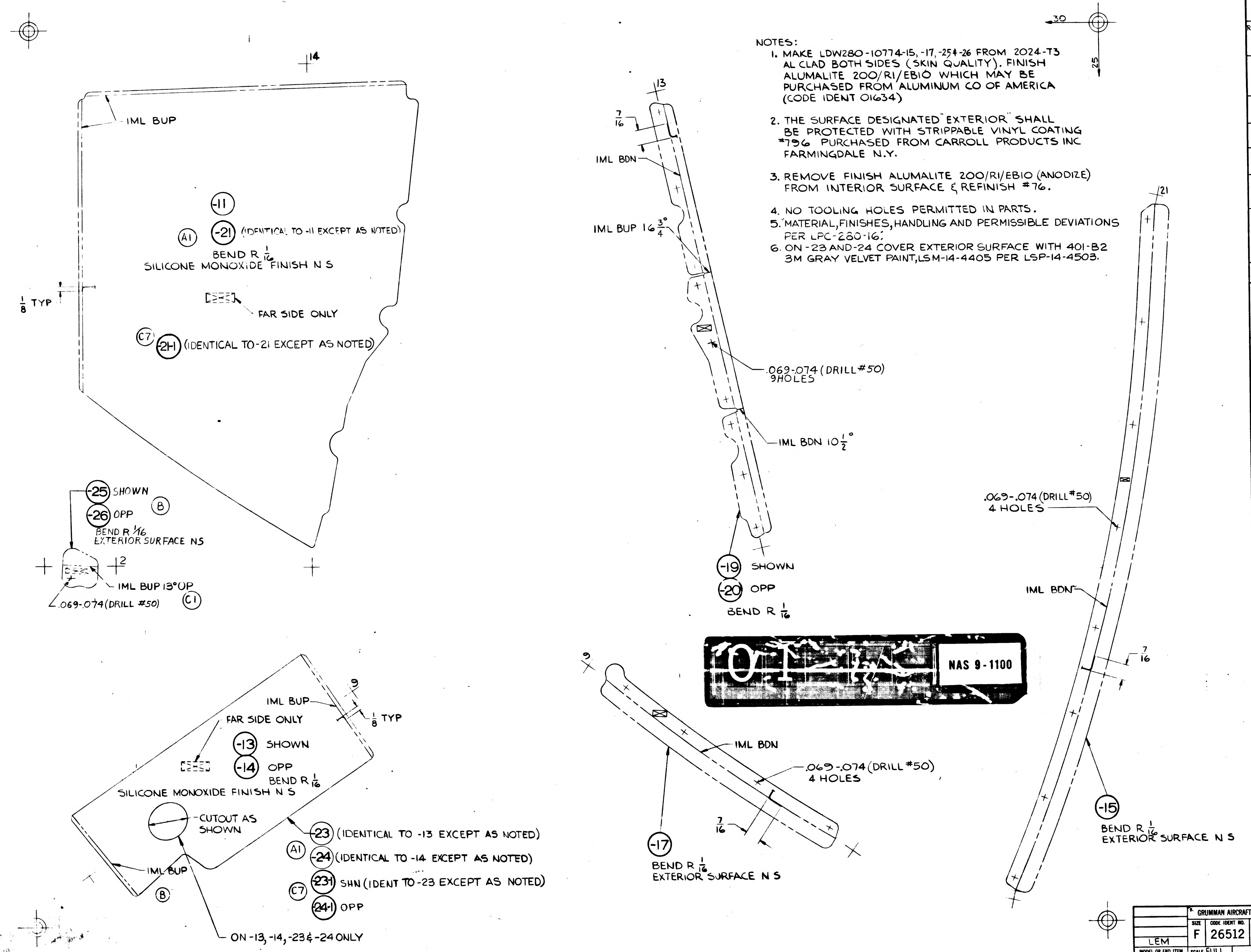
SIZE B | CODE IDENT NO. 26512 | LDW280-10774 | C

SCALE NONE | SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


IML BUP
-11
-21 (IDENTICAL TO -11 EXCEPT AS NOTED)
A1
BEND R 1/16
SILICONE MONOXIDE FINISH N S
FAR SIDE ONLY
C7
-21-1 (IDENTICAL TO -21 EXCEPT AS NOTED)
1/8 TYP
14
-25 SHOWN
-26 OPP
B
BEND R 1/16
EXTERIOR SURFACE NS
IML BUP 13° UP
.069-.074 (DRILL #50)
C1
2
13
7/16
IML BDN
IML BUP 16 3/4°
.069-.074 (DRILL #50) 9 HOLES
IML BDN 10 1/2°
-19 SHOWN
-20 OPP
BEND R 1/16
NAS 9-1100
9
IML BDN
.069-.074 (DRILL #50) 4 HOLES
7/16
-17
BEND R 1/16
EXTERIOR SURFACE N S
21
.069-.074 (DRILL #50) 4 HOLES
IML BDN
7/16
-15
BEND R 1/16
EXTERIOR SURFACE N S
IML BUP
9
1/8 TYP
FAR SIDE ONLY
-13 SHOWN
-14 OPP
BEND R 1/16
SILICONE MONOXIDE FINISH N S
CUTOUT AS SHOWN
-23 (IDENTICAL TO -13 EXCEPT AS NOTED)
A1
-24 (IDENTICAL TO -14 EXCEPT AS NOTED)
C7
-23-1 SHN (IDENT TO -23 EXCEPT AS NOTED)
-24-1 OPP
IML BUP
B
ON -13, -14, -23 & -24 ONLY
30
25
TRAM 0.J.

NOTES:

1. MAKE LDW280-10774-15, -17, -25 & -26 FROM 2024-T3 AL CLAD BOTH SIDES (SKIN QUALITY). FINISH ALUMALITE 200/RI/EBIO WHICH MAY BE PURCHASED FROM ALUMINUM CO OF AMERICA (CODE IDENT 01634)
2. THE SURFACE DESIGNATED "EXTERIOR" SHALL BE PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROLL PRODUCTS INC FARMINGDALE N.Y.
3. REMOVE FINISH ALUMALITE 200/RI/EBIO (ANODIZE) FROM INTERIOR SURFACE & REFINISH #76.
4. NO TOOLING HOLES PERMITTED IN PARTS.
5. "MATERIAL, FINISHES, HANDLING AND PERMISSIBLE DEVIATIONS PER LPC-280-16."
6. ON -23 AND -24 COVER EXTERIOR SURFACE WITH 401-B2 3M GRAY VELVET PAINT, LSM-14-4405 PER LSP-14-4503.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
	SIZE F	CODE IDENT NO. 26512	LDW280-10774	C
LEM MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

LDW280-10775 B

PART NO. LDW280-10775-37

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54241	LM-15(45)	2
		LM-14(44)	2
		LM-13(43)	2
		LM-12(42)	2
		LM-11(41)	2
		LM-10(40)	2
		LM-9(39)	2
		LM-8(38)	2
		LM-7(37)	2
LM		LM-6(36)	2
LFM-140		LM-5(35)	2
LFM-140	LDW290-54241	LM-4(34)	2
LM	LDW280-53241	LM-3(33)	2

PART NO. LDW280-10775-19 & -20

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 126	LDW280-28241	LTA-8(18)	1 EA
LM	LDW280-28241	LTA-8(18)	1 EA

PART NO. LDW280-10775-17, -18, -21 & -22 — GAEC SCH NO. 30-

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28241	LM-2(32)	1 EA
LM	LDW280-28241	LM-1(31)	1 EA
LM	LDW280-28241	LTA-8(18)	1 EA

PART NO. LDW280-10775-23 & -31

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28241	LTA-8(18)	2 EA

PART NO. LDW280-10775-15

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28241	STRUCT. TEST	2
		LM-2(32)	2
		LM-1(31)	2
LM	LDW280-28241	LTA-8(18)	2

PART NO. LDW280-10775-13 — GAEC SCH NO. 30-

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28241	LM-2(32)	4
LM	LDW280-23241	LM-1(31)	4

PART NO. LDW280-10775-25

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54241	LM-15(45)	2
		LM-14(44)	2
		LM-13(43)	2
		LM-12(42)	2
		LM-11(41)	2
		LM-10(40)	2
		LM-9(39)	2
		LM-8(38)	2
		LM-7(37)	2
LM		LM-6(36)	2
LFM-140		LM-5(35)	2
LFM-140	LDW280-54241	LM-4(34)	2
LM	LDW280-53241	LM-3(33)	4

PART NO. LDW280-10775-11 — GAEC SCH NO. 30-

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28241	LM-2(32)	2
LM	LDW280-28241	LM-1(31)	2
LM	LDW280-28241	LTA-8(18)	2

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.01	1.10	1.11		2.00	3.00	4.00	
REV	B	B	B	B		B	B	B	
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	A	GRUMMAN REL INFO B	
LAST DASH NO. USED	-41	PRIM NO.	JK/001
		215	MP-16B-5/8/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100 | LINE ITEM 1 | DOCUMENTATION TYPE II

DRAWN BY	M.H.MULLER 6/19/66	RELIABILITY	
LAYOUT BY	F.HALFEN		
CHECKED BY	F 4-23-66		
GR LEADER	J. Quartieri 5/5/66		
VEH DES INT	[illegible] 5/5		
STRUCTURES	[illegible] 5/6	PROJ ENGR	[illegible]/RMC 5-16-66
STRUCTURES	[illegible] 5/6	REL GROUP	G. Caramanico 5-21
WEIGHTS	A. Rabes DSC 5-13		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP THERMAL SHIELD
ASCENT STAGE-CABIN FRONT FACE
LOWER PANEL OUTBOARD

SIZE	CODE IDENT NO.		
B	26512	LDW280-10775	B
SCALE NONE		SHEET 1.00 OF 7	

ENG 77.1 12-65

REV "B" CDR 5-22-68 (4)

01

NAS 9-1100

LDW280-10775 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54241	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
	LDW280-54241	LM-4(34)	1
LM	LDW280-53241	LM-3(33)	1
PART NO. LDW280-10775-41		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54241	LM-15(45)	1 EA
		LM-14(44)	1 EA
		LM-13(43)	1 EA
		LM-12(42)	1 EA
		LM-11(41)	1 EA
		LM-10(40)	1 EA
		LM-9(39)	1 EA
		LM-8(38)	1 EA
		LM-7(37)	1 EA
		LM-6(36)	1 EA
	LDW280-54241	LM-5(35)	1 EA
LM	LDW280-54241	LM-4(34)	1 EA
PART NO. LDW280-10775-39 & -40		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54241	LM-15(45)	3
		LM-14(44)	3
		LM-13(43)	3
		LM-12(42)	3
		LM-11(41)	3
		LM-10(40)	3
		LM-9(39)	3
		LM-8(38)	3
		LM-7(37)	3
LM		LM-6(36)	3
LFM-140		LM-5(35)	3
LFM-140	LDW280-54241	LM-4(34)	3
LM	LDW280-53241	LM-3(33)	3
PART NO. LDW280-10775-29		GAEC SCH NO.	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET									
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED

GRUMMAN REL INFO

PRIM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO.

LINE ITEM

DRAWN BY

LAYOUT BY

CHECKED BY

PROJ ENGR

REL GROUP

DOCUMENTATION TYPE

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10775	B
SCALE	NONE	SHEET 1·01 OF	

Ⓑ

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1,1.10,2&4						EO A1	ADDED SH 1.10 & 4 SH 1 OF 5 WAS SH 1 OF 3. ADDED -21 & -22 CLIP, -15 CLIP REQM'T CHANGED TO (2) PER MOD, WAS (4) PER MOD.	LTA-8 LM-1 & -2		✓	P. KOCHLING 5-4-67		
	2	1.1.10						LEO 280-311	IN MOD BLOCK FOR -15 ADDED STRUCTURAL TEST REQM'TS	LTA-8 LM-1 & -2 STRUCT TEST	NOT	REQD			
	3	1,1.10,2&4						EO A3	CREATED -19 & -20 IN FLD, L/M & M/B	LTA-8 LM-1 & -2	NOT	REQD			
	4	1,1.10,2&4						EO A4	ADDED -21 & -23 REMOVED LTA-8 FROM -13 MODEL BLOCK	LTA-8		✓			
	5	1,1.10						LEO280-428	FOR -11 -13 -15 -17 THRU -22 ADDED LM-3 THRU LM-15 EFF.	LM-3 THRU LM-15	NOT	REQD			
	6	1,1.10,2&4						EO A6	ADDED -25, -27 & -29 RESTRICTED -11, -13 & -15 TO LTA-8, LM-1 & LM-2	LM-3 THRU LM-15(45)		-11, -13 & -15			
	7	1, 1.10&4						LEO280-441	ON INCORP. OF EO A6 FOR -25 ADD 1/16 BEND R (BEND R NEEDED TO COMPLETE PART)	LM-3 THRU LM-15	NOT	REQD			
	8	1, 1.10						EO A8	FOR -11, -13, -15, -17, -18, -19, -20, -21 & -22 REMOVED N/A LDW280-53241, LM-3 THRU LM-15.	LM-3 THRU LM-15		✓			
	9	1.10&4						EO A9	REF. EO A4 ADD -31 WAS ADD -21 AS	LTA-8	NOT	REQD			
B	1	1.00 3.00			✓			LEO 280-502	ADDED NOTE 2	LTA-8 LM-1 THRU LM-15	✓		HERB. SCHWETER 4-29-68		
	2	1.00 1.10 2.00 4.00					✓	EO B2	ADDED -37, REMOVED -27	LM-3 THRU LM-15		-27			
	3	1.00 1.10 2.00 4.00					✓	EO B3	CREATED -39 & -40, IN MOD/BLK LDW280-10775-25 (2) WAS (4) ADDED SH 1.01	LM-4 THRU LM-15		-25			
	4	1.00 1.10 2.00 3.00					✓	EO B4	MOD/BLK -29 (3) REQD/MODULE WAS (4) REQD/MODULE CREATED -41, REPLACING (1) -29	LM-3 THRU LM-15		-29			
	5	1.10 4.00					✓	EO B5	REVISED TRIM ON -39 & -40	LM-4 THRU LM-15	✓				

CHG APPROVED

LTR	GROUP LDR	VEH.DES INT.	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY	THERMO
A							
B	PK						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10775	B

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
B	6	1.00 1.11 2.00 3.00 4.00		LFM-140		✓		LEO 280-917 LCD 2360	FOR -25, -29, -37, -39, -40 & -41 LM-4 THRU LM-15 N/A LDW280-54241 WAS LDW280-53241. (ADDED SH 1.11)	LM-4 THRU LM-15	NOT	REQD	SCHWETER 4-29-68		
	7	1.00 1.11		LFM-126		✓		LCD 1021-33	ON -19 & -20 ADDED END ITEM LFM-126 REQ	LTA-8				P 5/3/68	

CHG APPROVED LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY	THERMO
B	F.N.R 5/2/68	5/2/68	5/3/68				5/3/68

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10775	B

SCALE NONE SHEET 1.11

ENG 77.3 5-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10775-41	E	CLIP	AL ALLOY SH	QQ-A-250/4	2024	.040×3×3	T42	88	
		-40					2024	.050×2×2	T42	76	
		-39					2024	.050×2×2	T42	76	
		-31		CLIP		QQ-A-250/4	2024T3	.024×2×2	NONE	88	
		-29		CLIP		QQ-A-250/4	2024	.050×1¾×1¾	T42	88	
		-37		CLIP		QQ-A-250/4	2024	.050×2⅛×3	T42	88	
		-25		CLIP		QQ-A-250/4	2024	.050×2×2	T42	88	
		-23		CLIP		QQ-A-250/4	2024 T3	.024×2×2	NONE	88	
		-22		CLIP		QQ-A-250/5	2024	.050×2×2	T42	88	
		-21		CLIP		QQ-A-250/5	2024	.050×2×2	T42	88	
		-20		SHIELD		QQ-A-250/4	2024-T3	.010×3×4	NONE	88	
		-19		SHIELD		QQ-A-250/4	2024-T3	.010×3×4	NONE	88	
		-18	E	SHIELD	AL ALLOY SH	QQ-A-355	2024-T3	.016×5¼×8	CM	88	
		-17		SHIELD			2024-T3	.016×5¼×8	CM	88	
		-15		CLIP			2024	.032×2×2	T42	88	
		-13		CLIP			2024	.024×1¾×1¾	T42	88	
		LDW280-10775-11	E	CLIP	AL ALLOY SH	QQ-A-355	2024	.032×2⅛×2⅛	T42	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
CM	CHEM-MILL	LSP14-26100
88	ANODIZE	LSP14-9030
T42	AL HEAT TREAT	MIL-H-6088
76	ALODINE	LSP14-9010

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10775

B

SCALE NONE
SHEET 2.00

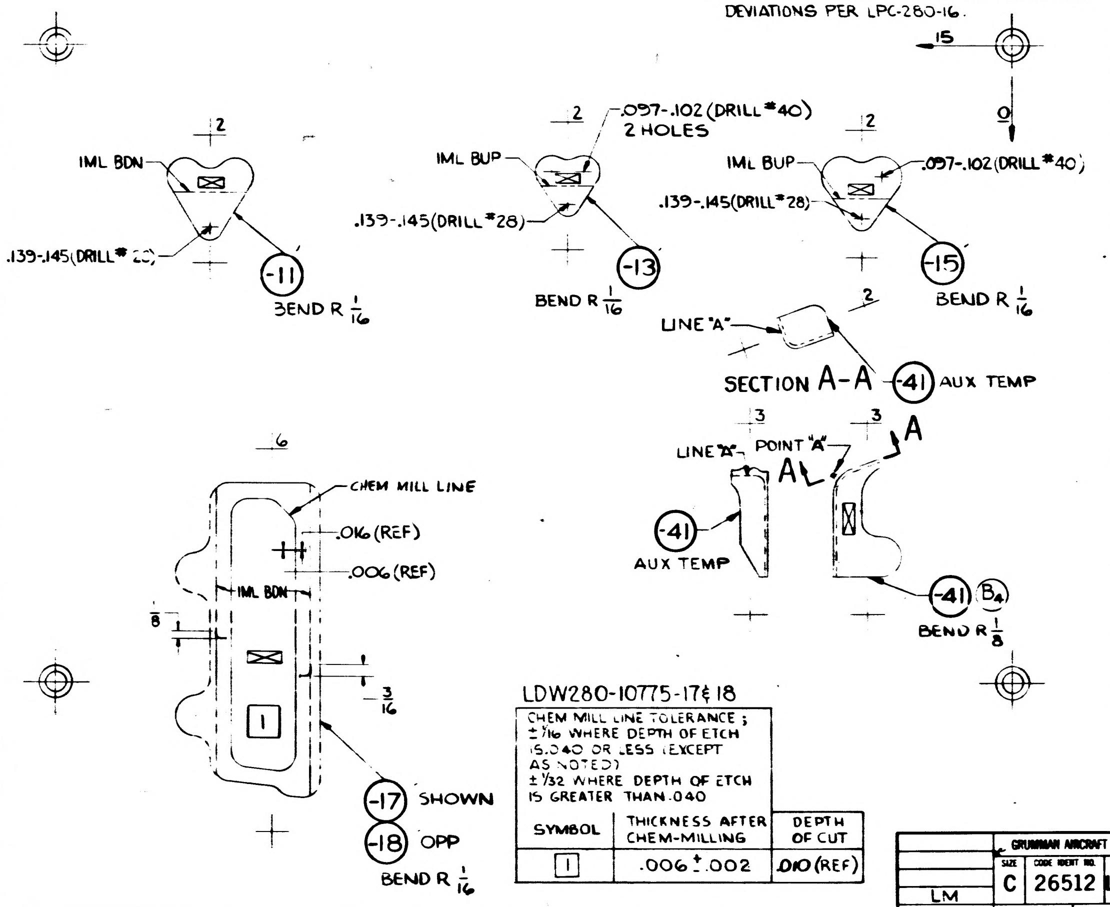
ENG 77.2 7-65

NAS 9-1100

01

TEAM WCG

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. MATERIAL, FINISHES, HANDLING AND PERMISSIBLE DEVIATIONS PER LPC-280-16.



15
0
2
IML BDN
.139-.145(DRILL # 28)
-11
BEND R 1/16
2
.097-.102 (DRILL #40)
2 HOLES
IML BUP
.139-.145(DRILL #28)
-13
BEND R 1/16
2
IML BUP
.097-.102(DRILL #40)
.139-.145(DRILL #28)
-15
BEND R 1/16
2
LINE "A"
SECTION A-A
-41 AUX TEMP
3
3
LINE "A"
POINT "A"
A
A
-41
AUX TEMP
-41 B4
BEND R 1/8
6
CHEM MILL LINE
.016 (REF)
.006 (REF)
IML BDN
1/8
3/16
1
-17 SHOWN
-18 OPP
BEND R 1/16

LDW280-10775-17 & 18

CHEM MILL LINE TOLERANCE ;
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
1	.006 ± .002	.010 (REF)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ~~SEE OTHER SIDES IF NECESSARY~~.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .015R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ∫ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

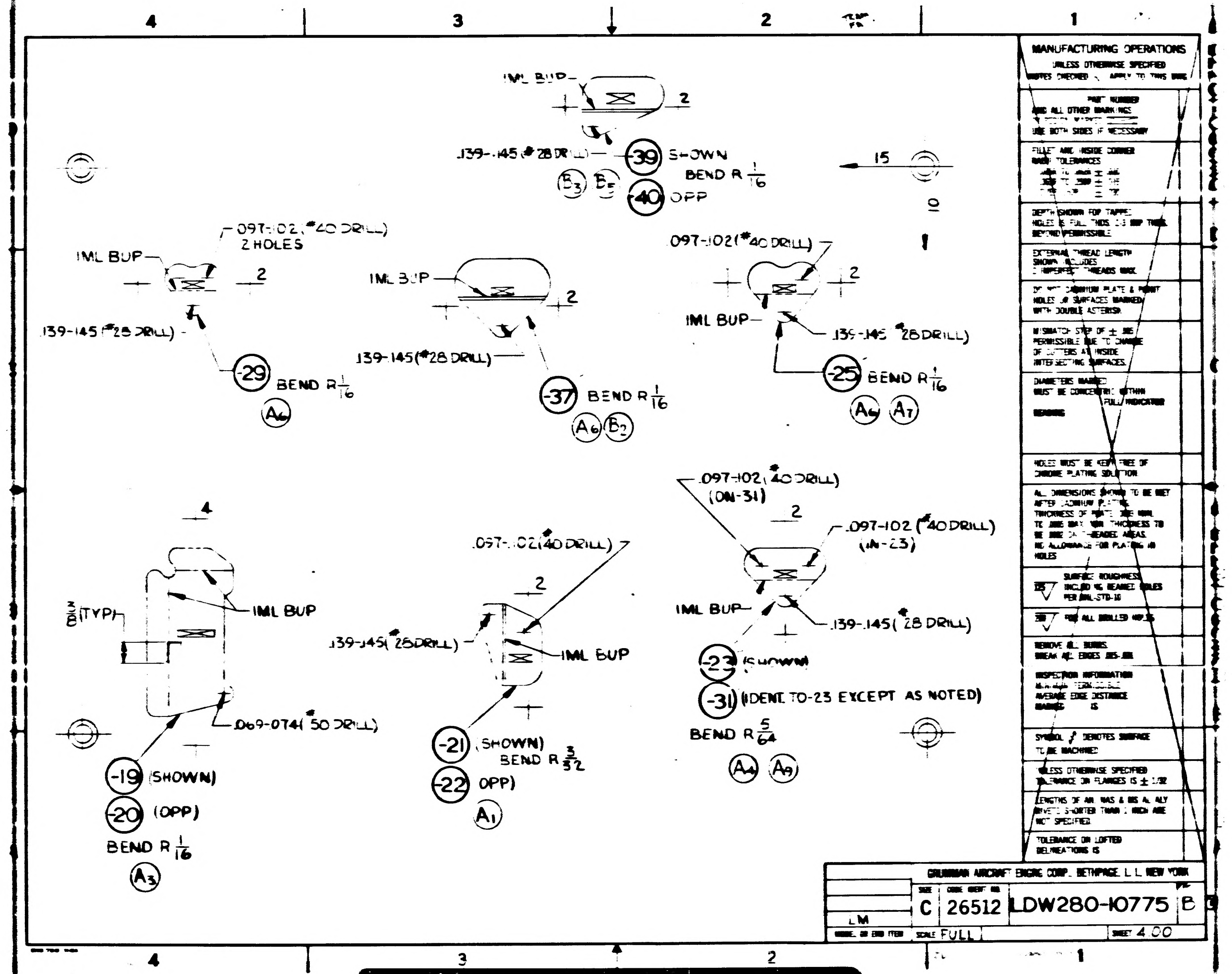
	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LM	SIZE C	CODE IDENT NO. 26512	LDW280-10775	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

LDW280-10775 B

FOR PHOTO REPRODUCTION

01

NAS 9-1100


IML BUP
2
.139-.145 (#28 DRILL)
-39 SHOWN
-40 OPP
BEND R 1/16
B3 B5
15
10
.097-.102 (#40 DRILL) 2 HOLES
IML BUP
2
.139-.145 (#28 DRILL)
-29 BEND R 1/16
A6
IML BUP
2
.139-.145 (#28 DRILL)
-37 BEND R 1/16
A6 B2
.097-.102 (#40 DRILL)
IML BUP
2
.139-.145 (#28 DRILL)
-25 BEND R 1/16
A6 A7
4
3/8 (TYP)
IML BUP
.069-.074 (#50 DRILL)
-19 (SHOWN)
-20 (OPP)
BEND R 1/16
A3
.097-.102 (#40 DRILL)
2
.139-.145 (#25 DRILL)
IML BUP
-21 (SHOWN)
-22 OPP)
BEND R 3/32
A1
.097-.102 (#40 DRILL) (ON-31)
2
.097-.102 (#40 DRILL) (ON-23)
IML BUP
.139-.145 (#28 DRILL)
-23 (SHOWN)
-31 (IDENT. TO -23 EXCEPT AS NOTED)
BEND R 5/64
A4 A9
4
3
2
1
MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED APPLY TO THIS DWG
PART NUMBER
AND ALL OTHER MARKINGS
USE BOTH SIDES IF NECESSARY
FILLET AND INSIDE CORNER
RADII TOLERANCES
DEPTH SHOWN FOR TAPPED
HOLES IS FULL THDS. 1/2 DIP THDS.
BEYOND PERMISSIBLE
EXTERNAL THREAD LENGTH
SHOWN INCLUDES
2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT
HOLES OR SURFACES MARKED
WITH DOUBLE ASTERISK
MISMATCH STEP OF ± .005
PERMISSIBLE DUE TO CHANGE
OF CUTTERS AT INSIDE
INTERSECTING SURFACES.
DIAMETERS MARKED
MUST BE CONCENTRIC WITHIN
FULL INDICATOR
READING
HOLES MUST BE KEPT FREE OF
CHROME PLATING SOLUTION
ALL DIMENSIONS SHOWN TO BE MET
AFTER CADMIUM PLATING
NO ALLOWANCE FOR PLATING IN
HOLES
125 SURFACE ROUGHNESS
INCLUDING REAMED HOLES
PER MIL-STD-10
FOR ALL DRILLED HOLES
REMOVE ALL BURRS
BREAK ALL EDGES
INSPECTION INFORMATION
AVERAGE EDGE DISTANCE
MARKING IS
SYMBOL DENOTES SURFACE
TO BE MACHINED
UNLESS OTHERWISE SPECIFIED
TOLERANCE ON FLANGES IS ± 1/32
LENGTHS OF AN, NAS & MS AL ALY
RIVETS SHORTER THAN 1 INCH ARE
NOT SPECIFIED
TOLERANCE ON LOFTED
DELINEATIONS IS
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK
LM
MODEL OR END ITEM
SIZE C
CODE IDENT NO. 26512
LDW280-10775
B
SCALE FULL
SHEET 4.00

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LE0280
EO NO. 1139
CONTROL INFO NO. LDW280B5687

SWIP

FOR THE FOLLOWING DASH NO'S. EFF. FOR LM-6(36) THRU LM-15(45) CHANGE N/A TO LDW 280-56241 (WAS LDW 280-54241)

DRAWING NO.	DASH NO. ▲	TITLE	CHG. NO.	
LDW280-10743	-17	WASHER A/S CABIN ~ FF LOWER THERMAL SHIELD	H8	✓
LDW280-11745	-19, -20, -31, -33 -35, -36, -37, -39 & -41	SHIELD A/S CABIN ~ FRONT FACE LOWER PANEL OUTB'D.	A10	✓
LDW280-10775	-25, -29, -37, -39 -40 & -41	CLIP A/S CABIN ~ FRONT FACE LOWER PANEL OUTBD	C1	✓
LDW280-11728	-11, -12, -13, -14, -15, -16, -17 -18, -19, -20, -21 & -22	SHIELD A/S CABIN - FRONT FACE LOWER SHIELD	A3	

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ L.C.D. 3179 PKG 4 PAGE 4

REASON FOR EO: SWIP II

DESCRIPTION OF EO: IN MODEL BLOCK N/A LDW280-56241 (WAS LDW280-54241) FOR EFF. LM-6 THRU LM-15 FOR DASH NO ▲

GAEC EO RELEASE: 10/9

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-6(36) THRU	
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK NOT SCRAP REQ'D

APPROVED BY								
DATE	10/1/68	10/2/68		10/1/68	10/1/68		10/3/68	10-9-68
	VDI	THERMO & SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C
DRAWING TITLE: NOTED ABOVE
DRAWING NO: LE0280
EO NO. 1139

11/1/68
ISSUED BY P. J. DELIA / X-7033 SECTION V.D.I. GROUP NO. 335 PL 25

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 126	LDW280-28242	LTA-8(18)	1 EA
LM	LDW280-54242	LM-15(45)	1 EA
		LM-14(44)	1 EA
		LM-13(43)	1 EA
		LM-12(42)	1 EA
		LM-11(41)	1 EA
		LM-10(40)	1 EA
		LM-9(39)	1 EA
		LM-8(38)	1 EA
		LM-7(37)	1 EA
		LM-6(36)	1 EA
		LM-5(35)	1 EA
	LDW280-54242	LM-4(34)	1 EA
	LDW280-28242	LM-3(33)	1 EA
	LDW280-28242	LM-2(32)	1 EA
	LDW280-28242	LM-1(31)	1 EA
LM	LDW280-28242	LTA-8(18)	1 EA

PART NO. LDW280-10777-21 & -22 GAEC SCH NO. 30

LDW280-10777 C

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28242	LTA-8(18)	1 EA

PART NO. LDW280-10777-23 & -24

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	STRUCTURAL TEST		2
LM	LDW280-28242	LTA-3(18)	8

PART NO. LDW280-10777-19 GAEC SCH NO. 30

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 126	LDW280-28242	LTA-8(18)	1 EA

PART NO LDW280-10777-23-1 & -24-1

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54242	LM-15(45)	4
		LM-14(44)	4
		LM-13(43)	4
		LM-12(42)	4
		LM-11(41)	4
		LM-10(40)	4
		LM-9(39)	4
		LM-8(38)	4
		LM-7(37)	4
		LM-6(36)	4
		LM-5(35)	4
	LDW280-54242	LM-4(34)	4
	LDW280-28242	LM-3(33)	4
	LDW280-28242	LM-2(32)	4
	LDW280-28242	LM-1(31)	4
LM	LDW280-28242	LTA-8(18)	4

PART NO. LDW280-10777-17 GAEC SCH NO. 30

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.01	1.10	1.11	2.00	3.00			
REV	C	C	C	C	C	C			
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -31

GRUMMAN REL INFO C

PRIM NO. 215 VK001 MP/6C 5/21/68

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY	AUGELLO 4-19-66	C.M.O.
LAYOUT BY	SHANLEY	PROJECT
CHECKED BY	J.S. 4-28-66	
GR.LEADER	J. Pusateri 4/29	
VEH.DES.	4/29	
STRUCT.	4/29	PROJ ENGR 5-5
STRUCT.	4/30	REL GROUP Botti 5-7-66
WEIGHTS	5-4	

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SHIELD
ASCENT STAGE – CABIN
BROW THERMAL

SIZE B CODE IDENT NO. 26512 LDW280-10777 C

SCALE NONE SHEET 1.00 OF 6

REV "C" CDR 5-22-68

SNG 77.1 12-65

01

NAS 9-1100

LDW280-10777 C

PART NO. LDW280-10777-29 & -30

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54242	LM-15(45)	1 EA
		LM-14(44)	1 EA
		LM-13(43)	1 EA
		LM-12(42)	1 EA
		LM-11(41)	1 EA
		LM-10(40)	1 EA
		LM-9(39)	1 EA
		LM-8(38)	1 EA
		LM-7(37)	1 EA
LM		LM-6(36)	1 EA
LFM140		LM-5(35)	1 EA
LFM140	LDW280-54242	LM-4(34)	1 EA

PART NO. LDW280-10777-27 GAEC SCH NO. 30

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28242	LM-15(45)	8
		LM-14(44)	8
		LM-13(43)	8
		LM-12(42)	8
		LM-11(41)	8
		LM-10(40)	8
		LM-9(39)	8
		LM-8(38)	8
		LM-7(37)	8
		LM-6(36)	8
		LM-5(35)	8
	LDW280-54242	LM-4(34)	8
	LDW280-28242	LM-3(33)	8
	LDW280-28242	LM-2(32)	8
LM	LDW280-28242	LM-1(31)	8

PART NO. LDW280-10777-31

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54242	LM-15(45)	2
		LM-14(44)	2
		LM-13(43)	2
		LM-12(42)	2
		LM-11(41)	2
		LM-10(40)	2
		LM-9(39)	2
		LM-8(38)	2
		LM-7(37)	2
LM		LM-6(36)	2
LFM140		LM-5(35)	2
LFM140	LDW280-54242	LM-4(34)	2

PART NO. LDW280-10777-25 & -26 GAEC SCH NO. 30

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28242	LM-3(33)	1 EA
LM	LDW280-28242	LM-2(32)	1 EA
LM	LDW280-28242	LM-1(31)	1 EA

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET									
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED

GRUMMAN REL INFO

PRIM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO.

LINE ITEM

DOCUMENTATION TYPE

DRAWN BY

LAYOUT BY

CHECKED BY

PROJ ENGR

REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SIZE B CODE IDENT NO. 26512 LDW280-10777 C ©

SCALE NONE SHEET 1.01 OF

ENG 77.1 12-65
3

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00, 1.10, 2.00 & 3.00						EO A1	ADDED SH. 1.10. SH. 1 OF 4 WAS 1 OF 3. REM'VD LDW 280-10777-11 & -12 FROM LTA-8 ADDED -23 & -24	LTA-8(18)		✓	H. GERAK 7-9-66		
B	1	1.00, 1.10 2.00 & 3.00	6B				✓	EO B1	ADDED SH 1.01 SH 1 OF 5 WAS 1 OF 4 CREATED -25 & -26 & ADDED NOTE 6, REWORKED -23 & -24, CANCELLED -11, -12, -13, -14, -15 & -16, REMOVED LM-3, -4, -5 & -6 EFF FROM M/B & REVISE B/M.	LTA-8(18) LM-1 LM-2, LM-3 LM-4, LM-5 & LM-6	-23 & -24	-11, -12, -13, -14, -15 & -16	HERB. SCHWETER 3-2-67		
	2	1.00 & 1.10						LEO280-311	IN M/B FOR -19 ADDED STRUCTURAL TEST REQM'TS	LTA-8	NOT	REQD			
	3	1.10						EO B3	EO CANCELLED BY EO B7	NOT REQD					
	4	1.10						EO B4	EO CANCELLED BY EO B7						
	5	1.01, 1.10 2.00 & 3.00	7A					EO B5	ADDED -27. LIMITED EFF OF -19 TO LTA-8(18)	LTA-8		-19			
	6	1.00, 1.01 1.10, 2.00 & 3.00	4A					EO B6	ADDED NOTE 7 IN F/D FOR -25, -26 "SEE NOTE 7" "WAS" SEE NOTE 6 ADDED EFF LM-3 THRU LM-15 REQ TO -21, -22, -25, -26 & -17	LM-1 THRU LM-15	✓				
	7	1.10 3.00						EO B7	CANCELLED EO B3 & B4 REVISED CALLOUT REFERENCE TO NOTE 5 FOR -23 & -24	LTA-8	✓				
	8	3.00	6C					EO B8	REVISED TRIM OF -21 & -22	LTA-8 LM-1 THRU LM-15	✓				
	9	3.00	6A						ON -23, -24, -25 & -26 ADDED .374 - .391 (3/8 DRILL) 4 HOLES						
	10	3.00	6A						3/8 FLANGE DIM SHOULD BE 25/64 (2) PLACES. DWG CORRECTION	NOT REQD	NOT	REQD	WCG	3/15	
C	1	1.10 3.00	B-1		✓			LEO280-577	ADDED NOTE 8.	LTA-8(18) LM-1(31) THRU LM-15(45)	NOT	REQD	T. HOLLOWAY 25-APR-68		

CHG APPROVED

LTR	GROUP LDR	VEH. DES.	STRUCTURE	STRUCTURE	WEIGHTS
A					
B	F.W.R. 3/14	J. Preston 3/14	JV 3/15		

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10777	C
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
C	2	1.11 2.00 3.00	1-B				✓	EO-C2	ON -21 & -22 IN B/M, REVISE MATERIAL TO 2014-O SPEC. GMPS 2006 H.T. TO T42 FINISH SEE NOTE 9 WAS AL. ALLOY SH QQ-A--250/5 SEE NOTE 2 (ALUMILITE) ADDED NOTE 9 FINISH PER LDW280-11367. ADDED SH 1.11.	LM-3(33) THRU LM-15(45)	NOT	REQD	T. HOLLOWAY —— 25·APR·68		
	3	1.11 3.00	1-B	O		✓		EO-C3 LCD 2360	ON -21 & -22, REVISED FINISH NOTE 9 (WAS) FINISH PER LDW 280-11367.	LM-3(33) THRU LM-15(45)	✓				
	4	1.00 1.01 1.11 2.00 3.00	4-A 6-C 1-B	LFM140		✓		EO-C4 LCD 2360	ON -25 & -26, MOD BLK. EFF (WAS) LM-1(31) THRU LM-15(45); ON -17, -21, -22, -27 N/A FOR LM-4(34) THRU LM-15(45) (WAS) LDW280-28242. ADDED -29, -30 & -31, & NOTE 10.	LM-4(34) THRU LM-15(45)		-25 & -26			
	5	1.00 1.11 2.00 3.00	4-B	LFM126		✓		LCD1021-33	ADDED -23-1 & -24-1. & NOTE 11	LTA-8(18)	NOT	REQD			
	6			LFM126		✓		LCD1021-33	ON -21 & -22 ADD. > END ITEM LFM126 REQ.	LTA-8(18)	NOT	REQD			

CHG APPROVED

LTR	GROUP LDR	VEH DES	STRUCTURE	STRUCTURE	WEIGHTS	PROJ ENGR	THERMO
C	5/13	5/10	5/10/68	for FEB			

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10777	C
SCALE NONE			SHEET 1.11

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10777-31	E	DOUBLER	AL ALLOY SHT	QQ-A-250/5	ALCLAD 2024-T3	.020 x 12 x 14	NONE	NONE	[illegible]
		LDW280-10777-30	E	SHIELD	MAKE FROM	LDW 280-	10870-11	17 x 40	NONE	NONE	6B
		LDW280-10777-29	E	SHIELD	MAKE FROM	LDW 280-	10870-11	17 x 40	NONE	NONE	6B
		LDW280-10777-24-1	E	SHIELD	MAKE FROM	LDW 280-	11310-13-1	17 x 41	NONE	NOTE 11	6B
		LDW280-10777-23-1	E	SHIELD	MAKE FROM	LDW 280-	11310-13-1	17 x 41	NONE	NOTE 11	6B
		LDW280-10777-24	E	SHIELD	MAKE FROM LDW280-11310			16 3/8 x 40 5/8	NONE	NONE	6B
		-23		SHIELD	MAKE FROM LDW280-11310			16 3/8 x 40 5/8	NONE	NONE	6B
		-22		ANGLE	2014-0	GMPS	2006	.020 X 4 X 41	T42	NOTE 9	5B
		-21		ANGLE	2014-0	GMPS	2006	.020 X 4 X 41	T42	NOTE 9	5B
		-19		CLIP	AL ALLOY SH	QQ-A-250/4	2024	.040 X 1 3/4 X 2	T42	88	7A
		-17		CLIP	AL ALLOY SH			.020 X 1 1/4 X 2			7A
		-27		CLIP	AL ALLOY SH	QQ-A-250/4	2024	.050 X 1 3/4 X 2	T42	88	7A
		-26		SHIELD		SEE NOTE 6		.015 x 16 3/8 x 40	NONE	NONE	6B
		LDW280-10777-25	E	SHIELD		SEE NOTE 6		.008 x 16 3/8 x 40	NONE	NONE	6B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP 14-9030
						76	ALODINE	LSP14-9010
						T42	AL. HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10777	C

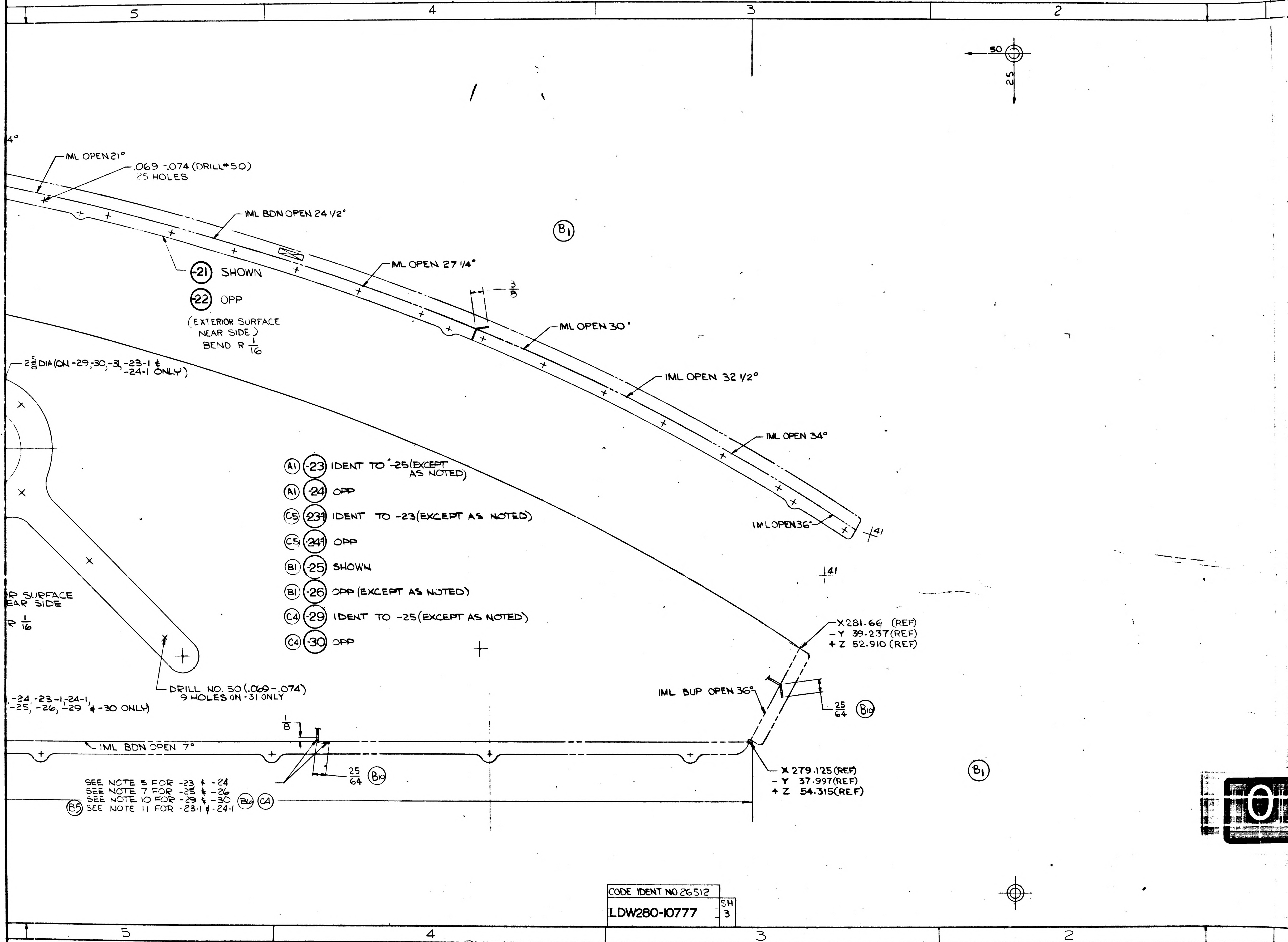
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


5
4
3
2
1
50
25
4°
IML OPEN 21°
.069 -.074 (DRILL #50)
25 HOLES
IML BDN OPEN 24 1/2°
(B1)
-21 SHOWN
-22 OPP
(EXTERIOR SURFACE NEAR SIDE)
BEND R 1/16
IML OPEN 27 1/4°
3/8
IML OPEN 30°
IML OPEN 32 1/2°
IML OPEN 34°
IML OPEN 36°
41
2 5/8 DIA (ON -29, -30, -31, -23-1 & -24-1 ONLY)
(A1) -23 IDENT TO -25 (EXCEPT AS NOTED)
(A1) -24 OPP
(C5) -23-1 IDENT TO -23 (EXCEPT AS NOTED)
(C5) -24-1 OPP
(B1) -25 SHOWN
(B1) -26 OPP (EXCEPT AS NOTED)
(C4) -29 IDENT TO -25 (EXCEPT AS NOTED)
(C4) -30 OPP
R SURFACE
EAR SIDE
R 1/16
X281.66 (REF)
-Y 39.237 (REF)
+Z 52.910 (REF)
DRILL NO. 50 (.069-.074)
9 HOLES ON -31 ONLY
-24, -23-1, -24-1, -25, -26, -29 & -30 ONLY)
IML BUP OPEN 36°
25/64 (B10)
1/8
IML BDN OPEN 7°
25/64 (B10)
X 279.125 (REF)
-Y 37.997 (REF)
+Z 54.315 (REF)
SEE NOTE 5 FOR -23 & -24
SEE NOTE 7 FOR -25 & -26
SEE NOTE 10 FOR -29 & -30 (B6) (C4)
(B5) SEE NOTE 11 FOR -23-1 & -24-1
(B1)

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. MAKE LDW280-10777-21 & -22 FROM 2024-T3 ALCLAD BOTH SIDES (SKIN QUALITY). FINISH ALUMALITE 200/R1/EB10 WHICH MAY BE PURCHASED FROM ALUMINUM CO. OF AMERICA (CODE IDENT NO. 01634)
3. THE SURFACE DESIGNATED "EXTERIOR" SHALL BE PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROLL PRODUCTS, INC FARMINGDALE N.Y.
4. REMOVE FINISH ALUMALITE 200/R1/EB10 (ANODIZE) FROM INTERIOR SURFACE & APPLY FINISH #76 (LSP-14-9010)
5. THIS AREA TO BE PAINTED WITH 401-B2 GRAY, FED STD COLOR #36231 PER LSP-14-4503. FOR -23, -24, 23-1 & 24-1
6. MAKE -25 & -26 FROM AL ALLOYCLAD SHEET (SKIN QUALITY) 2024-T3 QQ-A-250/5. SURFACE DESIGNATED "EXTERIOR" TO BE PREFINISHED WITH ALUMALITE 200/R1/EB10 & SEE NOTE 3. INTERIOR SURFACE TO BE PREFINISHED #76 (LSP 14-9010)
7. FINISH DESIGNATED SURFACES OF -25 & -26 WITH "PYROMARK" BLACK PAINT PER LPC 280-5
8. MATERIAL, FINISHES, HANDLING & PERMISSIBLE DEVIATIONS OF LM ASCENT STAGE THERMAL SHIELD SKINS PER LPC280-16.
9. DEOXIDIZE 6-10 MINUTES IN ACCORDANCE WITH LSP-14-7020. CHROMIC ACID ANODIZE IN ACCORDANCE WITH LSP-14-9030.
10. TEMPERATURE CONTROL COATING TO BE ON SURFACE DESIGNATED EXTERIOR.
11. FINISH DESIGNATED SURFACES OF -23-1 & -24-1 WITH "SICON, 3 X 923" BLACK PAINT PER LPC 280-12.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 28 X 70

PRINTING INFO ONLY
FULL SIZE SHEET AREA (30 X F/)= 17 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 4.5 SQ. FT.
PRINT TRIM LINE

C
B
A

LDW280-10777

02/02

NAS 9-1100

R-05986

CODE IDENT NO 26512
LDW280-10777 SH 3

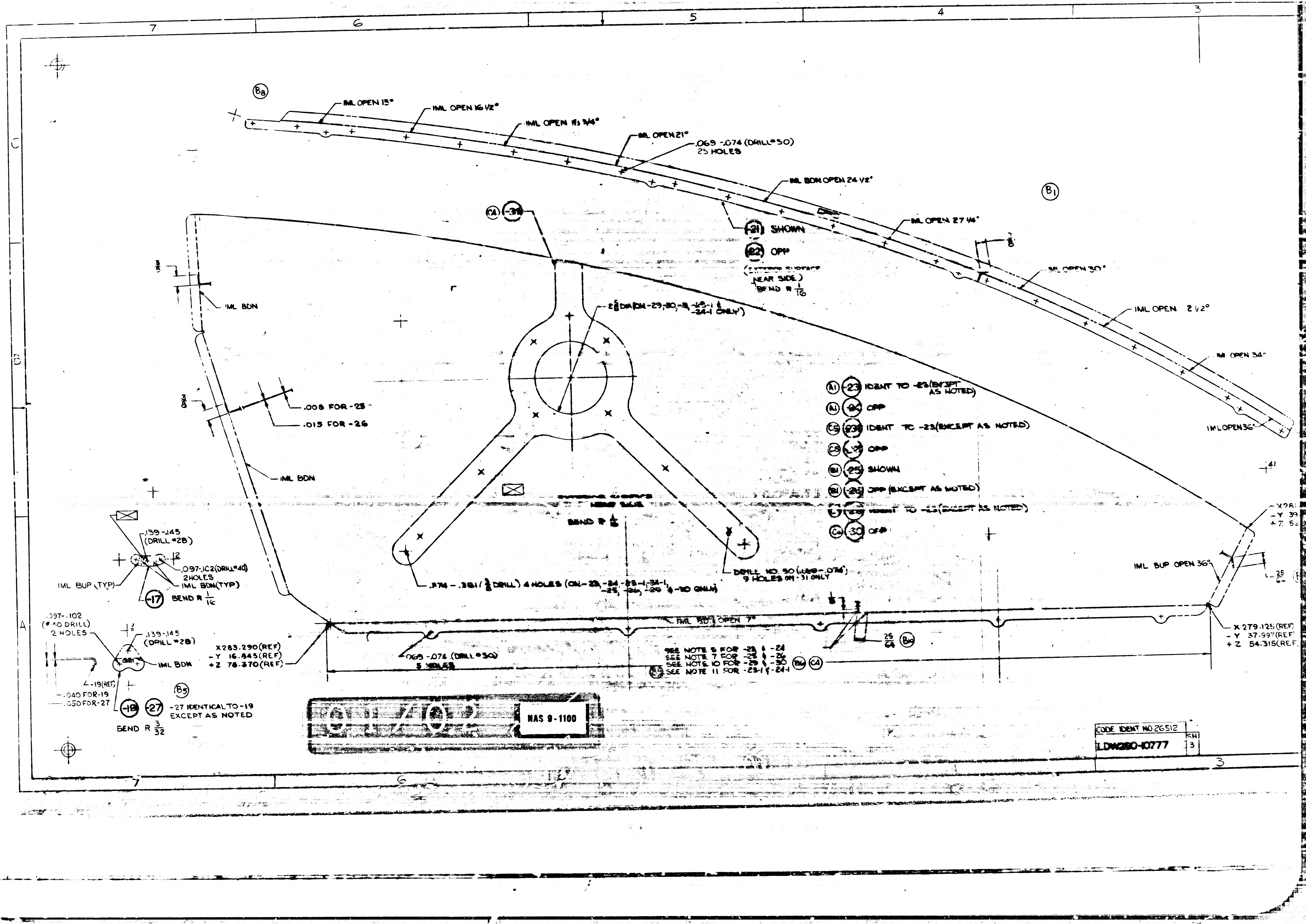
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

	SIZE	CODE IDENT NO.		
LEM	H	26512	LDW280-10777	C
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

2/2

FOR PHOTO REPRODUCTION B K2

2 FR.


7
6
5
4
3
C
B
A
B8
IML OPEN 13°
IML OPEN 16 1/2°
IML OPEN 18 3/4°
IML OPEN 21°
.069 -.074 (DRILL #50)
25 HOLES
IML BDN OPEN 24 1/2°
B1
C4 -31
-21 SHOWN
-22 OPP
(EXTERIOR SURFACE
NEAR SIDE)
BEND R 1/16
IML OPEN 27 1/4°
3/8
IML OPEN 30°
IML OPEN 2 1/2°
IML OPEN 34°
IML OPEN 36°
3/8
IML BDN
2 5/8 DIA (ON -29, -30, -31, -23-1 & -24-1 ONLY)
3/4
.008 FOR -25
.015 FOR -26
IML BDN
A1 -23 IDENT TO -23 (EXCEPT AS NOTED)
A1 -24 OPP
C5 -23 IDENT TC -23 (EXCEPT AS NOTED)
C5 -24 OPP
B1 -25 SHOWN
B1 -26 OPP (EXCEPT AS NOTED)
-29 IDENT TO -23 (EXCEPT AS NOTED)
C4 -30 OPP
BEND R 1/16
41
X 28
-Y 39
+Z 54
.139-.145
(DRILL #28)
2
.097-.102 (DRILL #40)
2 HOLES
IML BUP (TYP)
IML BDN (TYP)
-17 BEND R 1/16
.374 - .381 (3/8 DRILL) 4 HOLES (ON -23, -24, -23-1, -24-1, -25, -26, -29 & -30 ONLY)
DRILL NO. 50 (.069 - .074)
9 HOLES ON -31 ONLY
IML BUP OPEN 36°
25/64
.097-.102
(#40 DRILL)
2 HOLES
.139-.145
(DRILL #28)
2
IML BDN
X283.290 (REF)
-Y 16.845 (REF)
+Z 78.370 (REF)
∠-19 (REF)
.040 FOR -19
.050 FOR -27
B5
-19 -27 -27 IDENTICAL TO -19 EXCEPT AS NOTED
BEND R 3/32
IML BDN OPEN 7°
.069 -.074 (DRILL #50)
5 HOLES
3/8
25/64 B6
SEE NOTE 5 FOR -23 & -24
SEE NOTE 7 FOR -25 & -26
SEE NOTE 10 FOR -29 & -30 B6 C4
SEE NOTE 11 FOR -23-1 & -24-1
X 279.125 (REF)
-Y 37.997 (REF)
+Z 54.315 (REF)
7
6
3

91402

NAS 9-1100

CODE IDENT NO 26512
LDW280-10777
SH 3

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO NOTED
EO NO
CONTROL INFO NO. LDW280B 4751

ADD, -33 & -34 SAME AS -29 & -30 EXCEPT AS NOTED
-33 & 34 EFF LM-5(35) THRU LM-15(45) N/A LDW280-54242 1 EA REQ/MOD
IN L/M MAT'L FOR -33 & -34 .004 AL ALLOY SH ~ QQ-A-430 ~ 5056-H191 ~ FINISH - SEE NOTE △ REVISE NOTE 7 TO INCLUDE -33 & 34
IN F/D ADD NOTE △ TO READ AS FOLLOWS: {△- USE NEXT AVAIL. NOTE NO.

△. MATERIAL FOR -33 & -34 TO BE PREFINISHED PER LE1280-015 SURFACE DESIGNATED "EXTERIOR" TO BE PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROLL PRODUCTS INC., FARMINGDALE, N.Y.

RESTRICT -29 & -30 TO LM-4(34) (WAS LM-4 THRU LM-15)

DWG NO.	CHG NO
LDW280-10777	D1

NHA DESCRIPTION	NHA DWG NO.	CHG NO.
ADD -7 & -8 SHIELD ASSY SAME AS -3 & -4 EXCEPT LDW280-10777 -33 & -34 REPLACE LDW280-10777-29 & -30 ADD -5 & -6 SAME AS -1 & -2 EXCEPT -7 & -8 REPLACE -3 & -4 RESTRICT -1 & -2 TO LM-4 (WAS LM-4 THRU LM-15)	LDW280-54242	A3

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	✓	LCD 3309 PKG.# 1	(5)

REASON FOR EO: PLUME HEATING PROTECTION

DESCRIPTION OF EO: ADDED -33 & -34 & NOTE △. ADDED -33 & -34 TO NOTE #7. RESTRICTED -29 & -30 (WAS LM-4 THRU LM-15)

GAEC EO RELEASE: JK 8/12/68

MODEL	EFFECTIVITY GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LM-5 (35) THRU LM-15 (45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG ✓	RECORD EO	REWORK	SCRAP ✓

APPROVED BY	JKS	Dmk		H. Kms	CL		JaP	Lm
DATE	7/20/68	7/22/68		7/29/68	7/23/68		7/24/68	8/12/68
	VDI	THERMO ~~SUBSYST~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~COST~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DWG	NOTED	

072568
ISSUED BY HERB DONNER X7033 SECTION VEH. DES. INT GROUP NO. 335 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW280-10777		EO NO. D2
CONTROL INFO NO. LDW280B4963		

IN ZONE 5A REVISE CALLOUT:

(NOW) SEE NOTES 7 & 10 FOR -29 & -30
(WAS) SEE NOTE 10 FOR -29 & -30

REVISE NOTE 7 TO INCLUDE -29 & -30

LFM

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 2360 PKG #32 SHT 14 (5)

REASON FOR EO: TO INSURE PROPER FINISH ON PARTS

DESCRIPTION OF EO: REVISED NOTE 7

GAEC EO RELEASE: JK 8/14/68

MODEL	EI ~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM #140	LM-4(34) &	LM-5(35)
LM		LM-6(36)	THRU
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ / RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

APPROVED BY								
DATE	8/2/68	8/7/68		7/31/68	8/2/68		8/?/68	8-14-68
	VDI	~~SUPPORT~~ THEO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C

DRAWING TITLE: SHIELD ~ A/S ~ CABIN BROW ~ THERMAL

DRAWING NO.: LDW280-10777

EO NO.: D2

8-5-68
ISSUED BY HERB DONNER X7033 SECTION VEH DES. INT. GROUP NO. 335 PL 25

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG NO. LDW280-10777
EO NO. D3
CONTROL INFO NO. LM-3-6451

DESCRIPTION OF E.O.

REF E.O. D2

REVISE EFFECT. OF E.O. TO LM-4 LFM 140

LFM

(3)

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD 2300 PKG 22 SHT 14

REASON FOR EO: TO INSURE PROPER FINISH OF PARTS. (-29 & -30 RETRICTED TO LM-4)

DESCRIPTION OF EO: NOTED ABOVE

GAEC EO RELEASE: JC

MODEL	~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 140	LM-4 (34)	*LM-5 (35)
		LM-6 (36) (THRU)	
		LM-15 (45)	

DRAWING CHANGE REQD: V REVISE DWG ☐ RECORD EO

DISPOSITION OF PARTS: NOT REQD (REWORK / SCRAP)

PRIORITY: C

APPROVED BY					BM			
DATE	10/2/68				9-16-68	9-16-68	10/2/68	9-19-68
	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~[illegible]~~

DRAWING TITLE: SHIELD A.S. - CABIN - BROW - THERMAL

DRAWING NO.: LDW280-10777

EO NO.: D3

ISSUED BY UPE / VIC BOLLO X2151 SECTION VDI GROUP NO. 280 PL 25

01

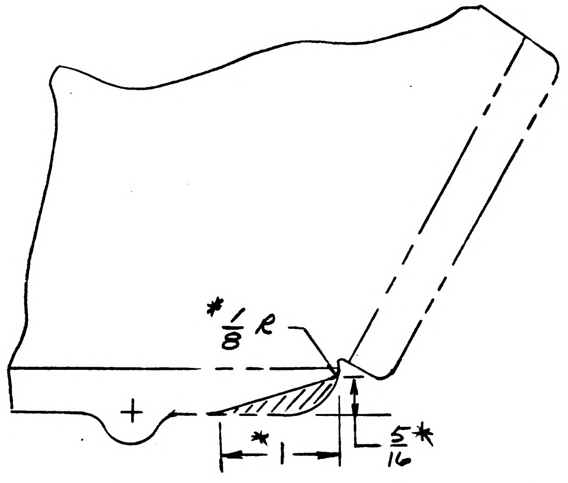
NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW2~~80~~-10777		EO NO. D4
CONTROL INFO NO. LM-5-22046		



* LOFTING REF ONLY

TRIM SHADED AREA ON -33 & -34

DETAIL SPEC REQ	☐	CL II ENGRG CHG	V	CL I ENGRG CHG	☐

5)

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
FLANGE BEING DEFLECTED BY RIVET HEAD (RIE LM NASA 9-2)	TRIMMED FLANGE ON -33 & -34	48

MODEL	EFFECTIVITY PROCURING ACTIVITY NO.	EFFECTIVITY GAEC UNIT NO.	EFFECTIVITY SUB CONTR UNIT NO.
LM		LM-8 (38)	
		THRU	
		LM-15 (45)	

DRAWING CHANGE REQD REVISE DWG	DRAWING CHANGE REQD RECORD EO	DISPOSITION OF PARTS REWORK	DISPOSITION OF PARTS SCRAP
✓		✓	

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY	F.D.R.			JDV	J.M.	CH	RP	Botte
DATE	10/2?/69			10/3/69	10/2?/69	10-20-69	9/24/69	10/22/69

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SHIELD A/S ~ CABIN BROW THERMAL	LDW 280-10777	D4

ISSUED BY LIAISON EV BERGEMAN X-86755 SECTION VDI GROUP NO. 280 PL 25

01

NAS 9-1100

LDW280-10778 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28242	LEM 2 (32)	1 EA
LEM	LDW280-28242	LEM 1 (31)	1 EA
LEM	LDW280-28242	LTA-8 (18)	1 EA
PART NO. LDW280-10778 -13 & -14 -15 & -16		GAEC SCH NO. 30-	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED

AST DASH NO. USED -16

GRUMMAN REL INFO A

PRIM NO.	LE(001)		
215	MP12		SR 4.19

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	KLINGENER 4/15/65	RELIABILITY	
LAYOUT BY	SHANLEY		
CHECKED BY	4.16.66		
GR LEADER	J Pusateri 4-19		
VEH DES INT	4-19		
STRUCTURES	EB	PROJ ENGR	J Alber 4-26
STRUCTURES	Hilderman 4/19	REL GROUP	Bott 4-28-66
WEIGHTS	A Robisch 4-26		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE ~ CABIN ~ BROW
THERMAL SHIELD

SIZE B
CODE IDENT NO. 26512
LDW280-10778 A
SCALE NONE
SHEET 1.00 OF 4

77.1 12-65

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1,1.10, 2.00 & 3.00					✓	E.O. A1 Ⓡ	CANCELLED -11 & -12 & CREATED -13,-14,-15 & -16 SH 1.00 OF 4 WAS 1.00 OF 3. ADDED SH 1.10	LTA-8(18) LEM-1(31) LEM-2(32)		-11 -12	L.VELASCO 9-13-66 WISNIESKI		

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS
	A					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10778	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-28242-16	E	CLIP	AL ALLOY SH	QQ-A-250/4	2024-T3	.040X2X 2 7/8	NONE	88	
								LDW280-28242-15	E	CLIP	AL ALLOY SH	QQ-A-250/4	2024-T3	.040X2X2 7/8	NONE	88	
								LDW280-28242-14	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040x1 3/4x4 1/8	NONE	88	
								LDW280-28242-13	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040x1 3/4x4 1/8	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10778	A

SCALE NONE

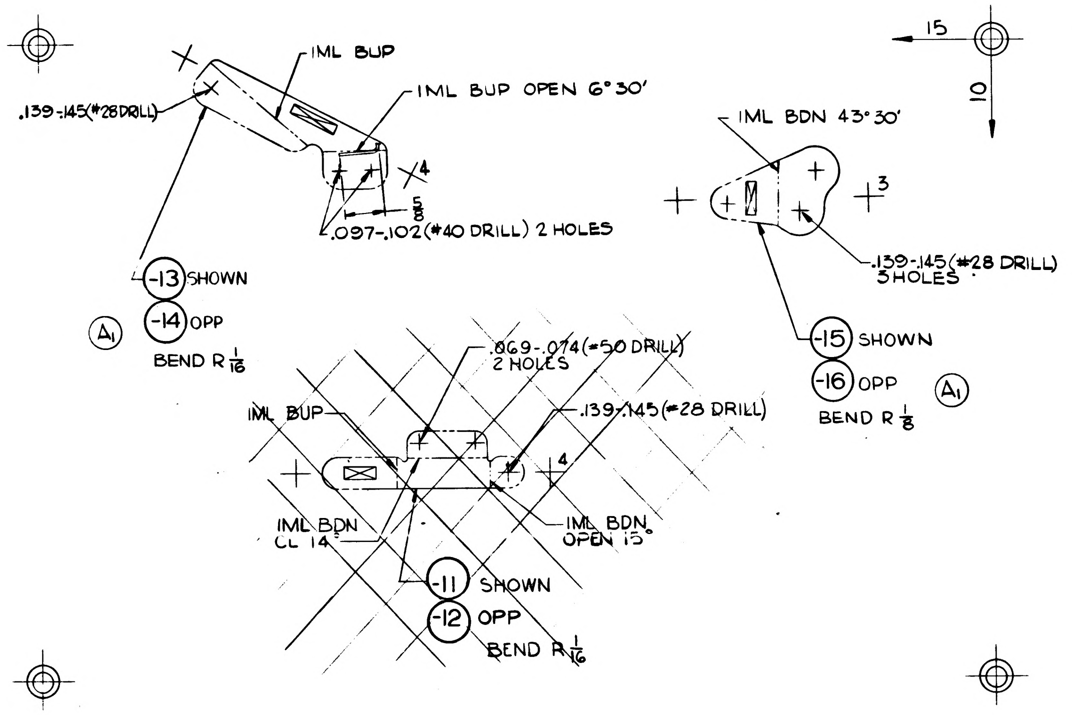
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1- NO TOOLING HOLES PERMITTED IN PARTS.



IML BUP
.139-.145(#28 DRILL)
IML BUP OPEN 6°30'
4
5/8
.097-.102(#40 DRILL) 2 HOLES
-13 SHOWN
-14 OPP
A1
BEND R 1/16
15
10
IML BDN 43°30'
3
.139-.145(#28 DRILL) 3 HOLES
-15 SHOWN
-16 OPP
A1
BEND R 1/8
.069-.074(#50 DRILL) 2 HOLES
IML BUP
.139-.145(#28 DRILL)
4
IML BDN CL 14
IML BDN OPEN 15°
-11 SHOWN
-12 OPP
BEND R 1/16

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .062R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE C	CODE IDENT NO. 26512	LDW280-10778	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

LDW280-10778 A

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10778
EO NO. B1
CONTROL INFO NO. LDW280A-3975

ADD -17 & -18 BRACKET, SAME AS -13 & -14, EXCEPT MATL. TO BE AL ALLOY SH QQ-A-250/4 2024-T3 .050 × 1 3/4 × 4 1/8 PROCESS NONE FINISH 88

IN M/B FOR -17 & -18 ADD: LM, N/A LDW280-28242, LM-1(31) THRU LM-15(45) 1 EA REQD/MOD.

ADD -19 & -20 CLIP , SAME AS -15 & -16, EXCEPT MATL. TO BE AL ALLOY SH QQ-A-250/4 2024-T3 .050 × 2 × 2 7/8 PROCESS NONE FINISH 88

IN M/B FOR -19 & -20 ADD: LM, N/A LDW280-28242, LM-1(31) THRU LM-15(45) 1 EA REQD/MOD.

FOR -13, -14, -15 & -16 REMOVE REQUIREMENTS FOR LM-1 & LM-2.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

PRE THERM SHLD

REASON FOR EO: TO PROVIDE STIFFER CLIPS FOR MOUNTING STAND-OFFS.

DESCRIPTION OF EO: ADDED -17, -18, -19 & -20. LIMITED EFFECTIVITY OF -13, -14, -15 & -16 TO LTA-8

GAEC C EO RELEASE: FR 12/6/6

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LM-1(31) THRU LM-15(45)		

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓			✓
REVISE DWG	RECORD EO	REWORK	SCRAP

APPROVED BY		AB			JR			
DATE	12/6/66	12/6/66		12-6-66	12/6		12/6/66	12/6/66
5	VDI	~~THERMO~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C

DRAWING TITLE: BRACKET A/S CABIN BROW SHIELD

DRAWING NO. LDW280-10778

EO NO. B1

ISSUED BY F. SHANLEY X1441 SECTION VEH. DESIGN INT. GROUP NO. 335 PL 35

01 NAS 9-1100

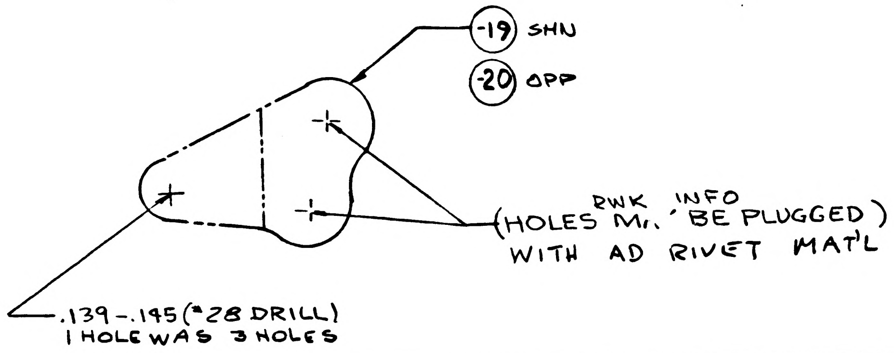
LMG 32.1 REV 3-65

B

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10778		EO NO. B3
CONTROL INFO NO. LDW280A-7211		

FOR -19 & -20: .139-.145 (#28 DRILL) 1 HOLE WAS 3 HOLES



DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	✓ LCR 1249 CCA 455

REASON FOR EO: ADDITION OF EVA HANDRAIL

DESCRIPTION OF EO: FOR -19 & -20: REMOVED TWO PILOT HOLES

GAEC EO RELEASE: JK 6/6/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM-3(33)	
		THRU	
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
✓		✓	

APPROVED BY	Jaf							
DATE	5/26/67			5/26/67	6/6/67		6/2/67	6/6/67
2	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: C

DRAWING TITLE: SHIELD INSTL A/S CABIN BROW THERMAL

DRAWING NO.: LDW280-10778

EO NO.: B3

ISSUED BY: M. SHAPIRO X1392

SECTION: VDI

GROUP NO.: 335

PL: 25

01

NAS 9-1100

ENG 32.1 REV 3-66

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10778
EO NO. B4
CONTROL INFO NO. LDW 280 B 1927

IN ~~MOD~~ BLK, REV. -17, -18, -19 & -20 NEXT ASSY.
(WAS) N/A LDW 280-28242 LM-1 (31) THRU LM-15 (45)
(NOW) N/A LDW 280-28242 LM-1 (31), LM-2 (32) & LM-3 (33)
N/A LDW 280-54242 LM-4 (34) THRU LM-15 (45)

LFM

DETAIL SPEC REQ
CL II ENGRG CHG
CL I ENGRG CHG ✓ LCD 2360 PKG 27

REASON FOR EO: PLUME HEATING PROTECTION

DESCRIPTION OF EO: IN MOD. BLK., FOR -17, -18, -19, -20 N/A (WAS) LDW 280-28242 LM-1 (31) THRU LM-15 (45)

GAEC EO RELEASE: (B) H.F. 3/1/68 5

MODEL	~~PROCURING ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 140	LM-4 (34)	LM5 (35)
		LM6 (36)	THRU
		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: NOT REQD REWORK SCRAP
APPROVED BY: JSS
DATE: 2/27/68
O VDI
SUPPORT
RELIAB. GROUP
GROUP LEADER: F. K. 2-26-68
STRESS GROUP: CAS 2/26/68
LIAISON ENGRG
PROJ ENGRG: JeP 2/27/68
2-29-68

PRIORITY: C
DRAWING TITLE: BRACKET ASCENT STAGE CABIN-BROW-THERMAL SHIELD
DRAWING NO.: LDW 280-10778
EO NO.: B4

3/6/68
ISSUED BY TOKARSHEWSKY x7033
SECTION VDI
GROUP NO. 335 PL 25

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10 2.00 3.00						EOA1	ADDED SH 1.10 SH 1.00 OF 4 WAS SH 1.00 OF 3 ADDED -23, -24, -25 & -26, REVISED -14 & -22	LEM-2 (32) LEM-1 (31) LTA-8 (18)	✓		O'MARA 7-9-66		
B	1	1.00, 1.10 2.00 3.00 4.00	2A 3A 11D 12B 14B					EOB1	REMOVED FOLLOWING PARTS: LDW280-10779-11, -12, -13, -14, -15, -16, -17, -19, -23, -24, -25 & -26. CREATED NEW PARTS: LDW280-10779-27, -28, -29, -30, -31, -33, -34, -35, -37, -39 & -40. REMOVED -11 THRU -14 & -23 THRU -26 FROM NOTE #2. ADDED -27 THRU -34. ADDED SECT BK-BK. ADDED SH4.00 SH1.00 OF 5 WAS SH1.00 OF 4	LTA-8 (18) LM-1 (31) LM-2 (32)		✓	T. MACAULAY 5-18-67		
	2	1.10, 4.00	12C					EO B2	TRIMMED -39 & -40	LTA-8 (18) LM-1 (31) LM-2 (32)	✓				
	3	1.10, 3.00						EO B3	CANCELLED BY EO B9	NOT REQD	NOT	REQD			
	4	1.10, 3.00						EO B4	CANCELLED BY EO B9	NOT REQD	NOT	REQD			
	5	1.00, 1.10 2.00, 4.00	11C					EOB5	IN F/D & B/M, CREATED -41 & -42 REMOVED -33 & -34	LTA-8 (18) LM-1 (31) LM-2 (32)		-33 -34			
	6	1.00, 1.10 2.00, 3.00 4.00	12B 12C 12D 14B					EOB6	ADDED -47, -48, -49, -50, -51, -53 & -54. ADDED -41, -43, -45 & -46 ADDED NOTE #6. FOR -35, -37, -39 & -40 REMOVED LM-1 & LM-2 REQUIREMENTS FOR -35, -37, -39 & -40	LM-1 (31) THRU LM-15 (45)		✓			
	7	1.00, 1.10 2.00, 4.00	12D					LEO280-405	ON INCORP. OF EOB6 -61 WAS -41.	LM-1 (31) THRU LM-15 (45)	NOT	REQD			
	8	1.10, 3.00						EO B8	REF. EO B6, IN NOTE #6, -47 THRU -54 WAS -41 THRU -48	LM-1 (31) THRU LM-15 (45)	✓				
	9	1.10, 3.00						EOB9	CANCELLED EO B3 & B4	NOT REQD	NOT	REQD			
	10	1.00, 1.10 2.00, 4.00	12B					EOB10	CANCELLED -50. REMOVED LM-3 THRU LM-15 EFFECTIVITY FOR -47, -48, 49, -51, -53 & -54.	LM-1 (31) THRU LM-15 (45)		✓			

CHG APPROVED

LTR	GROUP LDR	GR LEADER	VEH DES INT	STRUCT	STRUCT	WEIGHTS	C.M.O
A							
C							

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10779	C
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	APPD
											REWORK	SCRAP			
C	1	1.00, 4.00	10D 12D					EOC1	(REF EO B6) -41 & -42 WAS -33 & -34. (REF EO B5) ADDED DIM'S TO BEND RELIEF, -61 6 REQD/MOD WAS 2 REQD/MOD, -43 2 REQD/MOD WAS 6 REQD/MOD. ADDED SH 1.11. SH 1.00 OF 6 WAS SH 1.00 OF 5.	LTA-8 (18) LM-1 (31) THRU LM-15 (45)	✓	-43	T. MACAULAY 5-18-67		
	2	1.10, 4.00	10C					EO C2	(REF EO B5) (REF) BDN OP 25° WAS (REF) BUP OP 25°	LTA-8, LM-1 LM-2	NOT	REQD			
	3	1.10, 4.00	10D					LEO280-449	ON INCORP. OF EO. B6 -41 & -42 WAS -33 & -34. ON INCORP. OF E.O. B10 -41 & -42 WAS -33 & -34	LM-1 (31) THRU LM-15 (45)	NOT	REQD			
	4	1.00, 1.10						EO C4	FOR -21 & -22, ADDED LM-3 THRU LM-15 EFF	LM-3 (33) THRU LM-15 (45)	NOT	REQD			
	5	1.10, 4.00	14A					EOC5	ON LDW280-10779-27, -28, -47 & -48 TRIMMED FLANGE	LTA-8, LM-1 THRU LM-15	✓				
	6							EOC6	REF EO B9 EFFECTIVITY OF EO B9 SHOULD BE LTA-8, LM-1, LM-2, WAS LTA-8 (NOT APPLICABLE)	LTA-8 (18) LM-1 (31) LM-2 (32)	NOT	REQD			
	7	1.00, 1.10 4.00						LEO280-465	ON INCORP. OF EO. C5 EFFECTIVITY LTA-8, LM-1, LM-2 WAS LTA-8, LM-1 THRU LM-15 IN ERROR.	LTA-8 LM-1, LM-2	NOT	REQD			
	8	1.10						EOC8	CORRECTED CHANGE NUMBER FOR LEO 280-465, C7 WAS A5	NOT REQD	NOT	REQD			
	9	3.00			✓			LEO 280-502	ADDED NOTE #7 AS	LTA-8, LM-1 THRU LM-15	✓				
	10	1.10, 4.00	10D						REF EO B5 (REF) BDN OP 25° S/B (REF) BDN 25°	LTA-8, LM-1 LM-2		✓			
	11	1.10, 4.00	12B						REF EO B10 S/B -51 SAME AS -31, REMOVE -31 IN ITS ENTIRETY.	LM-1 (31) THRU LM-15 (45)		-31			
	12	1.10, 4.00	10C						REF EOC2 (REF) BDN OP 25° S/B (REF) BDN 25° AS	LTA-8, LM-1 LM-2	NOT	REQD			

CHG APPROVED

LTR	GR LEADER	VEH DES INT	STRUCT	STRUCT	WEIGHTS	C.M.O.
C		7DK 6/15	RS			

FOR CONTINUATION OF REVISIONS SEE SHEET ________

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10779	C
SCALE	NONE		SHEET 1.11

ENG 77.3 5-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
D	1	1.00, 1.01 2.00, 4.00	12B				✓	EO D1	ADDED -63 & -64. REMOVED LM-3(33) THRU LM-15(45) FROM -45 & -46. ADDED SH 1.12 & 1.01 & 1.02	LM-3 THRU LM-15		✓	G. ENGEL 4-29-68		
	2	4.00	12A 13A				✓	EO D2	ON SHEET 4, IN FLD ADDED DRILL CALLOUTS: .069-.074 (#50 DRILL)(7 HOLES); .097-.102 (#40 DRILL)(2 HOLES) ON -29, -30, -49 & -51	NOT REQ'D	NOT	REQ'D			
	3	1.00 1.01 3.00					✓	EO D3	ADDED LM-3(33) THRU LM-15(45) REQUIREMENTS FOR -41, -42 & -51	LM-3 THRU LM-15	NOT	REQ'D			
	4	1.00, 1.01 2.00, 4.00	13C 12B	O		✓		EO D4 LCD 2360	IN F/D, L/M & M/B ADDED -65 & -67 ~ IN M/B FOR -53 ADDED LM-3 THRU LM-15 ~ IN M/B FOR -41, -42 & -51 REMOVED LM-3 THRU LM-15 EFFECTIVITY	LM-3 THRU LM-15		✓			
	5	1.01 2.00 3.00 4.00	12A	LFM 140		✓		EO D5 LCD 2360	ADDED -69, ADDED NOTE 8	LM-4 THRU LM-15	NOT	REQ'D			
	6	1.00, 1.01 2.00 4.00	14B 12A	LFM 126		✓		LCD1021-33	ADDED -27-1, -28-1, -29-1 & -30-1.	LTA-8(18)	NOT	REQ'D			
	7	1.00		LFM 126		✓		LCD1021-33	ON -21 & -22 ADDED END ITEM LFM126 REQ	LTA-8(18)	NOT	REQ'D			
	8	1.00, 1.01 1.02, 3.00 4.00	12A	LFM 140		✓		LCD 2360	RESTRICTED -21 & -22 TO LTA-8, LM-1, LM-2 & LM-3 WAS LTA-8, LM-1 THRU LM-15 RESTRICTED -67 TO LM-3 WAS LM-3 THRU LM-15. N/A FOR -43, -53 -61, -63, -64 & -65 WAS LDW280-28243. REVISED TRIM OF -69	LM-4 THRU LM-15	✓		D.H.	5/22/68	5-24-68

CHG APPROVED

LTR	GR LEADER	VEH DES INT	STRUCT	STRUCT	WEIGHTS	C.M.O.	THERMO
D	5/7	5/17/68	5/21/68	FEB			5/20/67

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10779	D
SCALE NONE			SHEET 1.12

01

NAS 9-1100

LDW280-10779 E

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28243	LM-2(32)	1EA
LM	LDW280-28243	LM-1(31)	1EA
PART NO LDW280-10779-47,-48,-49 & 54			
LM	LDW280-28243	LTA-8(18)	2EA
PART NO LDW280-10779-37,-39 & -40			
LM	LDW280-54243	LM-15(45)	6
		LM-14(44)	6
		LM-13(43)	6
		LM-12(42)	6
		LM-11(41)	6
		LM-10(40)	6
		LM-9(39)	6
		LM-8(38)	6
		LM-7(37)	6
LM		LM-6(36)	6
LFM140	LDW280-54243	LM-5(35)	6
LFM140	LDW280-28243	LM-4(34)	6
LM	LDW230-28243	LM-3(33)	6
LM	LDW280-28243	LM-2(32)	6
LM	LDW280-28243	LM-1(31)	6
PART NO. LDW280-10779-61		GAEC SCH NO. 30-	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 140	LDW 280-28243	LM-4(34)	1
LM	LDW 280-28243	LM-2(32)	1
LM	LDW 280-28243	LM-1(31)	1
PART NO LDW280-10779-51			
LFM 126	LDW280-28243	LTA-8(18)	1EA
PART NO. LDW280-10779-41-1,-42-1		GAEC SCH NO. 30-	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28243	LTA-8(18)	6
PART NO LDW280-10779-35			
LM	LDW280-28243	LTA-8(18)	1EA
PART NO LDW280-10779-27,-28,-29,-30,-41 & -42			
LFM 140	LDW280-28243	LM-4(34)	1EA
LFM 126	LDW280-28243	LTA-8(18)	1EA
LM		LM-3(33)	1EA
		LM-2(32)	1EA
		LM-1(31)	1EA
LM	LDW280-28243	LTA-8(18)	1EA
PART NO. LDW280-10779-21&-22		GAEC SCH NO. 30-	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	1.11	2.00	3.00	4.00
REV	E	C	C	E	E	E
SHEET	1.01	1.02	1.12	2.01		
REV	E	E	E	E		
SHEET			1.13			
REV			E			

LAST SECT LTR USED

LAST DASH NO. USED -71

GRUMMAN REL INFO E

PRIM NO. VK(001) 215 ME-3E-8/9

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM #1

DOCUMENTATION TYPE II

DRAWN BY	AUGELLO 4-14-66 C.M.O.
LAYOUT BY	SHANLEY
CHECKED BY	D.FASS 4-20-66
GR. LEADER	J. Pusateri 4/25
VEH. DESIGN	4/26
STRUCT.	4/29
STRUCT.	Hellerman 4/30
WEIGHT	R. L. D.J. 5-4
PROJ ENGR	J. Allen 5-5
REL GROUP	Botti 5-2-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SHIELD
ASCENT STAGE~CABIN
CHEEK THERMAL

SIZE B CODE IDENT NO. 26512 LDW280-10779 E

SCALE NONE SHEET 1.00 OF 11

REV "D" CDR 5-22-68

ENG 77.1 12-65

01 NAS 9-1100

LDW280-10779 E

LFM126	LDW280-28243	LTA-8(18)	1EA
PART NO. LDW280-10779-27-1, -28-1, -29-1, -30-1			
LFM140	LDW280-28243	LM-4(34)	1
LM	LDW280-28243	LM-2(32)	1
LM	LDW280-28243	LM-1(31)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10779-53		GAEC SCH NO.	

LM	LDW280-54243	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
LM		LM-6(36)	1
LFM140	LDW280-54243	LM-5(35)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10779-71		GAEC SCH NO.	

LM	LDW280-28243	LM-2(32)	2 EA
LM	LDW280-28243	LM-1(31)	2 EA
PART NO. LDW280-10779-45, -46			
LM	LDW280-28243	LM-3(33)	1
PART NO. LDW280-10779-67			
LM	LDW280-54243	LM-15(45)	2
		LM-14(44)	2
		LM-13(43)	2
		LM-12(42)	2
		LM-11(41)	2
		LM-10(40)	2
		LM-9(39)	2
		LM-8(38)	2
		LM-7(37)	2
LM		LM-6(36)	2
LFM140	LDW280-54243	LM-5(35)	2
LFM140	LDW280-28243	LM-4(34)	2
LM	LDW280-28243	LM-3(33)	2
LM	LDW280-28243	LM-2(32)	2
LM	LDW280-28243	LM-1(31)	2
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10779-43		GAEC SCH NO.	

SH REV STATUS. FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	
REV	
SHEET	
REV	
SHEET	
REV	
LAST SECT LTR USED	
LAST DASH NO USED	

GRUMMAN REL INFO
PRIM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO.
LINE ITEM
DOCUMENTATION TYPE
DRAWN BY
LAYOUT BY
CHECKED BY
PROJ ENGR
REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10779	E
SCALE	NONE	SHEET 1.01	OF

(E)

ENG 77.1 12-65

01

NAS 9-1100

LDW280-10779 E

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM140	LDW280-28243	LM-4(34)	1

PART NO. LDW280-10779-65

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54243	LM-15(45)	2EA
↕	↕	LM-14(44)	2EA
		LM-13(43)	2EA
		LM-12(42)	2EA
		LM-11(41)	2EA
		LM-10(40)	2EA
		LM-9(39)	2EA
		LM-8(38)	2EA
		LM-7(37)	2EA
LM		LM-6(36)	2EA
LFM140	LDW280-54243	LM-5(35)	2EA
LFM140	LDW280-28243	LM-4(34)	2EA
LM	LDW280-28243	LM-3(33)	2EA

PART NO. LDW280-10779-63&-64

GAEC SCH NO.

~~SH REV STATUS. FOR DESCRIPTION OF REV SEE SUBQ SH~~

SHEET									
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

~~LAST DASH NO. USED~~

~~GRUMMAN REL INFO~~

PRIM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

~~TOLERANCE UNLESS SPECIFIED~~

FRACTIONS - DECIMALS — ANGLES

ORIG DWG AUTH

~~DETAIL SPEC REQUIREMENT~~

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO.

LINE ITEM

DOCUMENTATION TYPE

DRAWN BY

LAYOUT BY

CHECKED BY

PROJ ENGR

REL GROUP

~~GRUMMAN AIRCRAFT ENGRG CORP~~
BETHPAGE, L. I., NEW YORK

SIZE B

CODE IDENT NO. 26512

LDW280-10779 E (E)

SCALE NONE

SHEET 1.02 OF

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
D	1	1.00, 1.01 2.00, 4.00	12B				✓	EO D1	ADDED -63 & -64. REMOVED LM-3(33) THRU LM-15(45) FROM -45 & -46. ADDED SH 1.12 & 1.01 & 1.02	LM-3 THRU LM-15		✓	G. ENGEL 4-29-68		
	2	4.00	12A 13A				✓	EO D2	ON SHEET 4, IN FLD ADDED DRILL CALLOUTS: .069-.074 (#50 DRILL)(7 HOLES); .097-.102 (#40 DRILL)(2 HOLES) ON -29, -30, -49 & -51	NOT REQ'D	NOT	REQ'D			
	3	1.00 1.01 3.00					✓	EO D3	ADDED LM-3(33) THRU LM-15(45) REQUIREMENTS FOR -41, -42 & -51	LM-3 THRU LM-15	NOT	REQD			
	4	1.00, 1.01 2.00, 4.00	13C 12B	O		✓		EO D4 LCD 2360	IN F/D, L/M & M/B ADDED -65 & -67 ~ IN M/B FOR -53 ADDED LM-3 THRU LM-15 ~ IN M/B FOR -41, -42 & -51 REMOVED LM-3 THRU LM-15 EFFECTIVITY	LM-3 THRU LM-15		✓			
	5	1.01 2.00 3.00 4.00	12A	LFM 140		✓		EO D5 LCD 2360	ADDED -69, ADDED NOTE 8	LM-4 THRU LM-15	NOT	REQ'D			
	6	1.00, 1.01 2.00 4.00	14B 12A	LFM 126		✓		LCD 1021-33	ADDED -27-1, -28-1, -29-1 & -30-1.	LTA-8(18)	NOT	REQ'D			
	7	1.00		LFM 126		✓		LCD 1021-33	ON -21 & -22 ADDED END ITEM LFM 126 REQ	LTA-8(18)	NOT	REQ'D			
	8	1.00, 1.01 1.02, 3.00 4.00	12A	LFM 140		✓		LCD 2360	RESTRICTED -21 & -22 TO LTA-8, LM-1, LM-2 & LM-3 WAS LTA-8, LM-1 THRU LM-15 RESTRICTED -67 TO LM-3 WAS LM-3 THRU LM-15. N/A FOR -43, -53 -61, -63, -64 & -65 WAS LDW280-28243. REVISED TRIM OF -69	LM-4 THRU LM-15	✓		D.J.		
E	1	1.01, 1.02, 1.12		LFM 140			✓	EO E1 LCD 2360	IN FLD, B/M & M/B REMOVED -53 & -65	LM-3(33) THRU LM-15(45)		-53 -65	B. Acunto Jr. 12-17-68		
	2	1.00, 1.12, 2.01, 4.00	11C	LFM 126		✓		EO E2, CCA 498, LCD 1021-33	ADDED -41-1 & -42-1 ADDED SH 2.01	LTA-8(18)	NOT	REQD			
	3	1.00, 1.12		LFM 140		✓		EO E3, LCD 2360	ADDED LM-4(34) EFF TO -51	LM-4(34)	NOT	ED			
	4	1.00, 1.01, 1.02, 1.12		LFM 140		✓		LEO 280-1046 LCD 2360	FOR -21, -22, -43, -53, -61, -63, -64 & -65 ADDED N/A LDW 280-28243, EFF LM-4(34).	LM-4(34)	NOT	REQD			
	5	1.00, 1.01 1.02, 1.12		LFM 140		✓		LEO 280-1061 LCD 2360	FOR -43, -53, -61, -63, -64, -65 & -69 WITH N/A LDW 280-28243, REMOVED LM-4(34).	LM-4(34)		✓			
	6	1.01, 2.00 3.00, 4.00	12A	LFM 140		✓		EO E6 LCD 2360	ADDED -71 EFF LM-5(35) THRU LM-15(45) N/A LDW280-54243. REVISED NOTE 6 TO AGREE. REMOVED LM-5(35) THRU LM-15(45) EFF FROM -69.	LM-5(35) THRU LM-15(45)		-69	E.C.G.		

CHG APPROVED

LTR	GR LEADER	VEH DES INT	STRUCT	STRUCT	WEIGHTS	C.M.O.	THERMO	
D	5/17	5/17/68	5/21/68	FEB			5-10-68	
E								

FOR CONTINUATION OF REVISIONS SEE SHEET 1.13

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10779	E
SCALE	NONE		SHEET 1.12

Ⓔ

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
E	7	1.01 1.02 1.00		LFM 140		✓		EO E7 Ⓔ	RESTRICTED EFF OF -65 TO LM-4 BY REMOVING LM-5 THRU LM-15. RESTRICTED EFF OF -53 TO LM-1, LM-2 & LM-4 BY REMOVING LM-5 THRU LM-15 ADDED SH 1.13	LM-5 THRU LM-15		-53 -65	ACUNTO 1-7-69		

FOR CONTINUATION OF REVISIONS SEE SHEET ________

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10779	E Ⓔ
SCALE NONE			SHEET 1.13

ENG 77.3 5-66

01 NAS 9-1100

QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	LDW280-10779-71			SHIELD	AL ALLOY SH	QQ-A-250/5	2024-T81	.004 x 11 x 36	NONE	76 & NOTE 6	12A
	-67			SHIELD	AL ALLOY SH	QQ-A-250/4	2024-T3	.032 x 15 x 36	NONE	NOTE 6	12A
	-65			SHIELD	AL ALLOY SH	QQ-A-250/4	2024-T3	.032 x 4 x 5	NONE	NOTE 6	11C
	-61	E		CLIP	AL ALLOY SH	QQ-A-250/5	2024	.040 X 2 1/8 X 2	T42	88	12D
	-64			CLIP		QQ-A-250/5	2024	.040 X 3 X 3	T42	88	12B
	-54			SHIELD		QQ-A-250/5	2024 T3	.010 X 4 X 4	NONE	NOTE 6	11C
	-53							.010 X 4 X 4			11C
	-51							.020 X 15 X 36			12B
	-49							.010 X 15 X 36			12B
	-48							.010 X 23 X 34			14B
	-47			SHIELD		QQ-A-250/5	2024 T3	.010 X 23 X 34	NONE	NOTE 6	14B
	-63			CLIP		QQ-A-250/5	2024	.040 X 3 X 3	T42	88	12B
	-46			CLIP		QQ-A-250/5	2024	.040 X 2 1/8 X 2 1/4	T42	88	12B
	-45			CLIP		QQ-A-250/5	2024	.040 X 2 1/8 X 2 1/4	T42	88	12B
	-43			CLIP	AL ALLOY SH	QQ-A-250/5	2024	.040 X 1 7/8 X 2	T42	88	12C
	-30-1			SHIELD	MAKE FROM LD	W280-11310-13-	4		NONE	NONE	12B
	-42			SHIELD	AL ALLOY SH	QQ-A-250/5	2024 T3	.010 X 4 X 4 1/8	NONE	NOTE 2	11C
	-41			SHIELD	AL ALLOY SH	QQ-A-250/5	2024 T3	.010 X 4 X 4 1/8	NONE	NOTE 2	11C
	-29-1			SHIELD	MAKE FROM	LDW280-11310-	13-4		NONE	NONE	12B
	-40			CLIP	AL ALLOY SH	QQ-A-250/5	2024	.032 X 2 1/8 X 2 1/4	T42	88	12B
	-39							.032 X 2 1/8 X 2 1/4			12B
	-37							.036 X 1 7/8 X 2			12C
	-35			CLIP	AL ALLOY SH	QQ-A-250/5	2024	.036 X 2 1/8 X 2	T42	88	12D
	-28-1			SHIELD	MAKE FROM	LDW280-11310-	13-4		NONE	NONE	14B
	-30			SHIELD	AL ALLOY SH	QQ-A-250/5	2024 T3	.010 X 15 X 36 1/8	NONE	NOTE 2	12B
	-29							.010 X 15 X 36 1/8			12B
	-28							.010 X 23 X 34			14B
	-27			SHIELD	AL ALLOY SH	QQ-A-250/5	2024 T3	.010 X 23 X 34	NONE	NOTE 2	14B
	-27-1			SHIELD	MAKE FROM	LDW280-11310-	13-4		NONE	NONE	14B
	-22			ANGLE	AL ALLOY SH	QQ-A-250/5	SEE NOTE 3	.020 X 2 5/8 X 19 1/2	NONE	SEE	C3
	LDW280-10779-21	E		ANGLE	AL ALLOY SH	QQ-A-250/5	SEE NOTE 3	.020 X 2 5/8 X 19 1/2	NONE	NOTE 5	C3

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T42	AL HEAT TREAT	MIL-H-6088
						76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10779	E

SCALE NONE | SHEET 2.00

(E)

ENG 77.2 5-64

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10779-42-1	E	SHIELD	MAKE FROM LDW	280-11310-13-4			NONE	NONE	11C
		LDW280-10779-41-1	E	SHIELD	MAKE FROM LDW	280-11310-13-4			NONE	NONE	11C

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

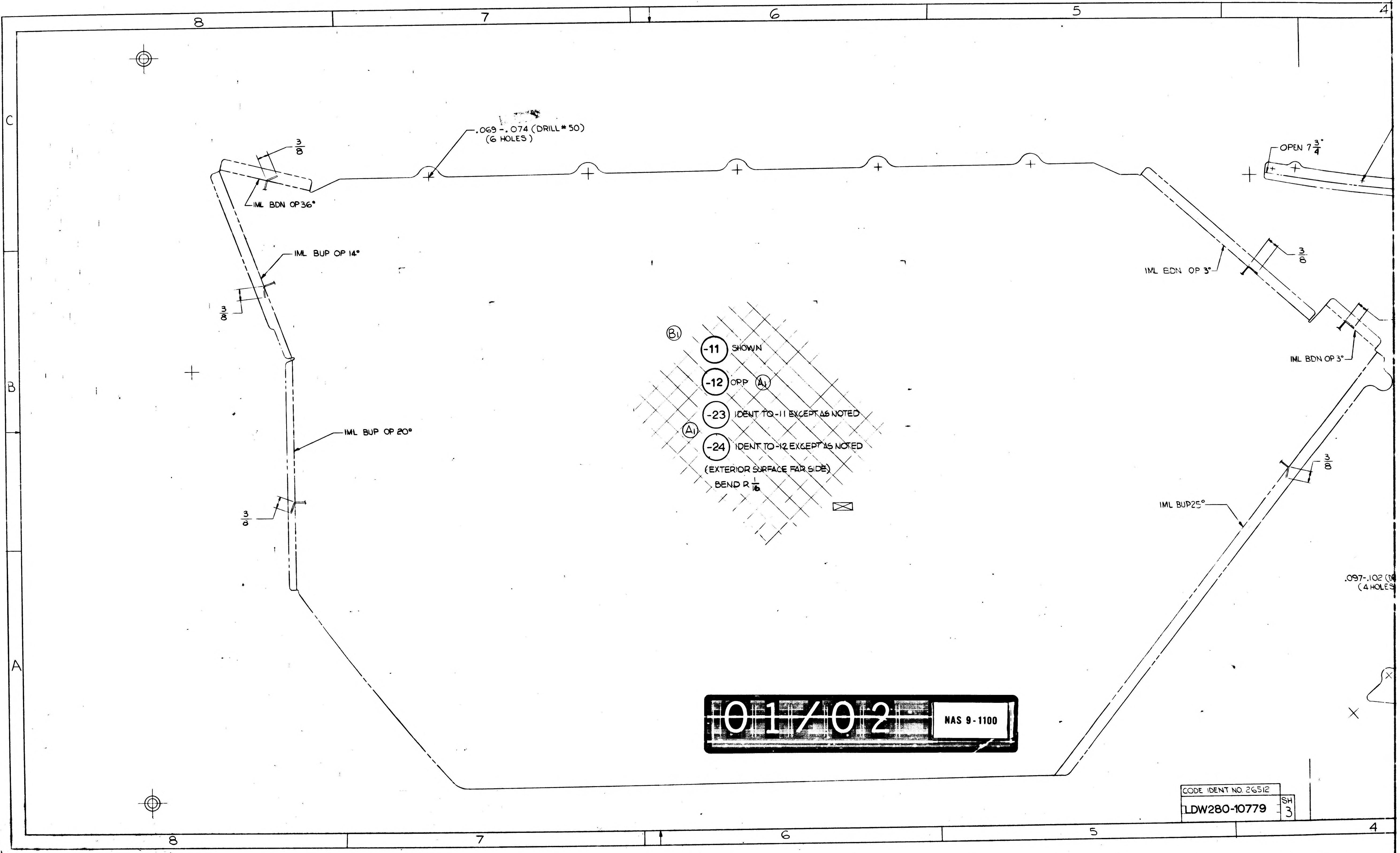
SIZE B | CODE IDENT NO. 26512 | LDW 280-10779 | E Ⓔ

SCALE NONE | SHEET 2.01

ENG 77.2 7-65

01

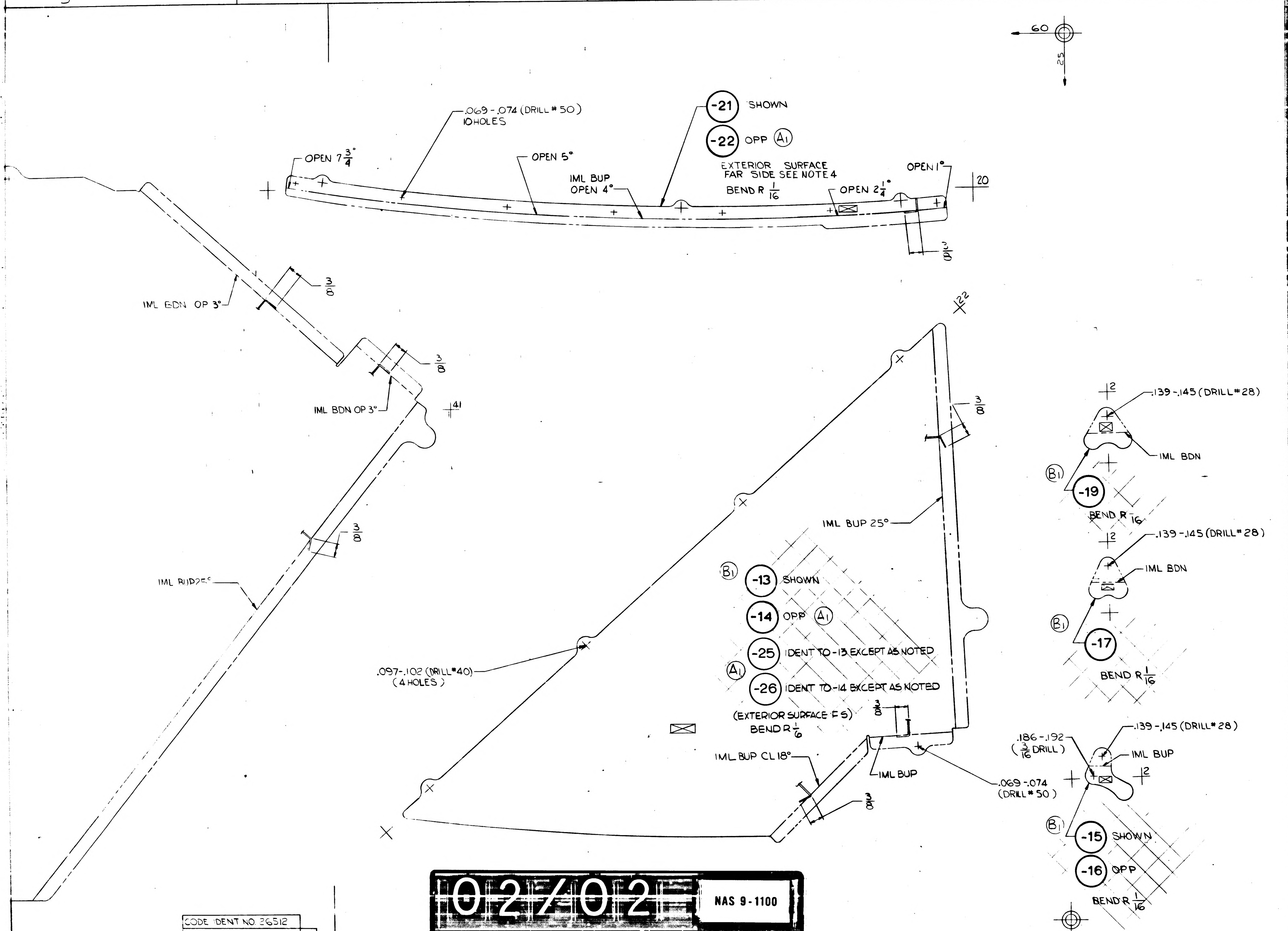
NAS 9-1100


8
7
6
5
4
C
B
A
.069-.074 (DRILL #50)
(6 HOLES)
3/8
IML BDN OP36°
IML BUP OP 14°
3/8
IML BUP OP 20°
3/8
OPEN 7 3/4
IML EDN OP 3°
3/8
IML BDN OP 3°
3/8
IML BUP25°
.097-.102 (D
(4 HOLES
B1
-11 SHOWN
-12 OPP A1
-23 IDENT TO -11 EXCEPT AS NOTED
A1
-24 IDENT TO -12 EXCEPT AS NOTED
(EXTERIOR SURFACE FAR SIDE)
BEND R 1/16
8
7
6
5
4

01/02 NAS 9-1100

CODE IDENT NO. 26512
LDW280-10779
SH 3

2/2


5
4
3
2
60
.25
.069-.074 (DRILL # 50)
10 HOLES
-21 SHOWN
-22 OPP (A1)
OPEN 7 3/4°
OPEN 5°
IML BUP
OPEN 4°
EXTERIOR SURFACE
FAR SIDE SEE NOTE 4
BEND R 1/16
OPEN 1°
OPEN 2 1/4°
20
3/8
IML BDN OP 3°
IML BDN OP 3°
41
22
IML BUP 25°
IML BUP 25°
(B1)
-13 SHOWN
-14 OPP (A1)
-25 IDENT TO -13 EXCEPT AS NOTED
(A1)
-26 IDENT TO -14 EXCEPT AS NOTED
(EXTERIOR SURFACE F.S)
BEND R 1/16
.097-.102 (DRILL # 40)
(4 HOLES)
IML BUP CL 18°
IML BUP
.069-.074
(DRILL # 50)
12
.139-.145 (DRILL # 28)
IML BDN
(B1)
-19
BEND R 1/16
.139-.145 (DRILL # 28)
IML BDN
(B1)
-17
BEND R 1/16
.186-.192
(3/16 DRILL)
.139-.145 (DRILL # 28)
IML BUP
(B1)
-15 SHOWN
-16 OPP
BEND R 1/16
TP/ww

CODE IDENT NO. 26512

LDW280-10779 SH 3

02/02I NAS 9-1100

5 4 3 2

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. ON -27 THRU -30, -41 & -42 FIN # 76 BOTH SURFACES. EXTERIOR SURFACE TO BE PAINTED WITH 401-B2 GRAY, FED STD COLOR # 36231 PER LSP14-4503.
3. MAKE LDW280-10779-21 & -22 FROM 2024-T3 ALCLAD BOTH SIDES (SKIN QUALITY). FINISH ALUMALITE 200/R1/EB10 WHICH MAY BE PURCHASED FROM ALUMINUM CO. OF AMERICA (CODE IDENT 01634)
4. ON -21 & 22 THE SURFACE DESIGNATED "EXTERIOR" SHALL BE PROTECTED WITH STRIPPABLE VINYL COATING # 796 PURCHASED FROM CARROLL PRODUCTS, INC. FARMINGDALE N.Y.
5. FROM -21 & 22 REMOVE FINISH ALUMALITE 200/R1/EB10 (ANODIZE) FROM INTERIOR SURFACE & REFINISH # 76.
6. FINISH EXTERIOR SURFACES OF -47 -48 -49, -51, -53, -54, -65, -67 & 71 WITH "PYROMARK" BLACK PAINT PER LPC 280-5.
7. MATERIAL, FINISHES, HANDLING AND PERMISSIBLE DEVIATIONS PER LPC-280-16.
8. TEMPERATURE CONTROL COATING TO BE ON SURFACE DESIGNATED EXTERIOR

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	√

DWG SIZE 28 X 84

PRINTING INFO ONLY
FULL SIZE SHEET AREA (30 X) = 21.5 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 5.5 SQ. FT.

PRINT TRIM LINE

C B A

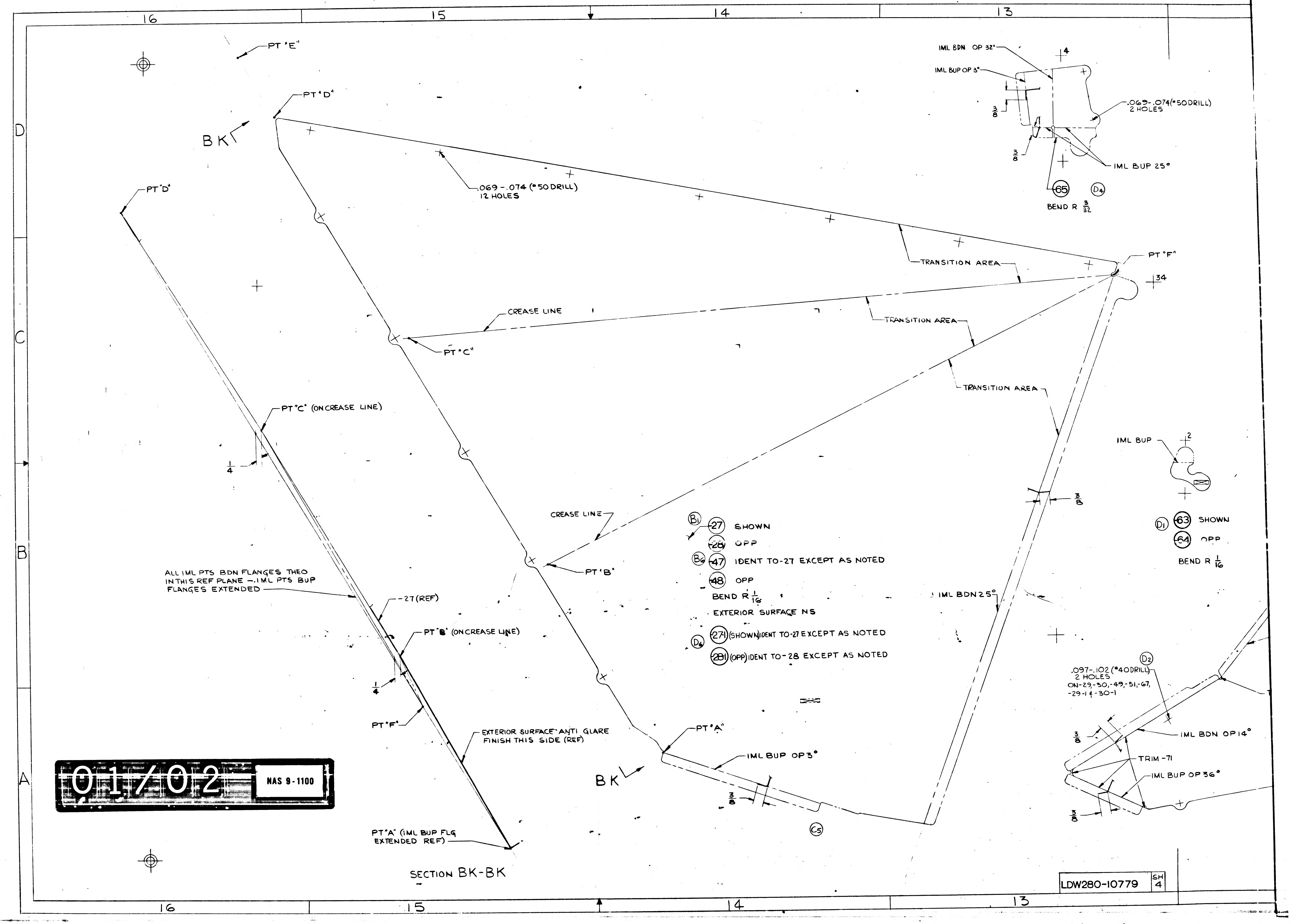
LDW280-10779 E

LDW280-10779 E

R 4.762

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LM	SIZE H	CODE IDENT NO. 26512	LDW280-10779	E
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

1 FOR PHOTO REPRODUCTION B K2


16
15
14
13
D
C
B
A
PT "E"
PT "D"
BK
.069-.074 (#50 DRILL) 12 HOLES
PT "D"
TRANSITION AREA
PT "F"
34
CREASE LINE
TRANSITION AREA
PT "C"
TRANSITION AREA
PT "C" (ON CREASE LINE)
1/4
CREASE LINE
PT "B"
ALL IML PTS BDN FLANGES THEO IN THIS REF PLANE -. IML PTS BUP FLANGES EXTENDED
-27 (REF)
PT "B" (ON CREASE LINE)
1/4
PT "F"
EXTERIOR SURFACE ANTI GLARE FINISH THIS SIDE (REF)
PT "A"
IML BUP OP 3°
BK
3/8
C5
PT "A" (IML BUP FLG EXTENDED REF)
IML BDN 25°
3/8
IML BDN OP 32°
IML BUP OP 3°
4
.069-.074 (#50 DRILL) 2 HOLES
3/8
3/8
IML BUP 25°
-65
D4
BEND R 3/32
IML BUP
2
D1
-63 SHOWN
-64 OPP
BEND R 1/16
D2
.097-.102 (#40 DRILL) 2 HOLES ON -29, -30, -49, -51, -67, -29-1 & -30-1
3/8
IML BDN OP 14°
TRIM -71
IML BUP OP 36°
3/8

B1 -27 SHOWN

-28 OPP

B6 -47 IDENT TO -27 EXCEPT AS NOTED

-48 OPP

BEND R 1/16

EXTERIOR SURFACE NS

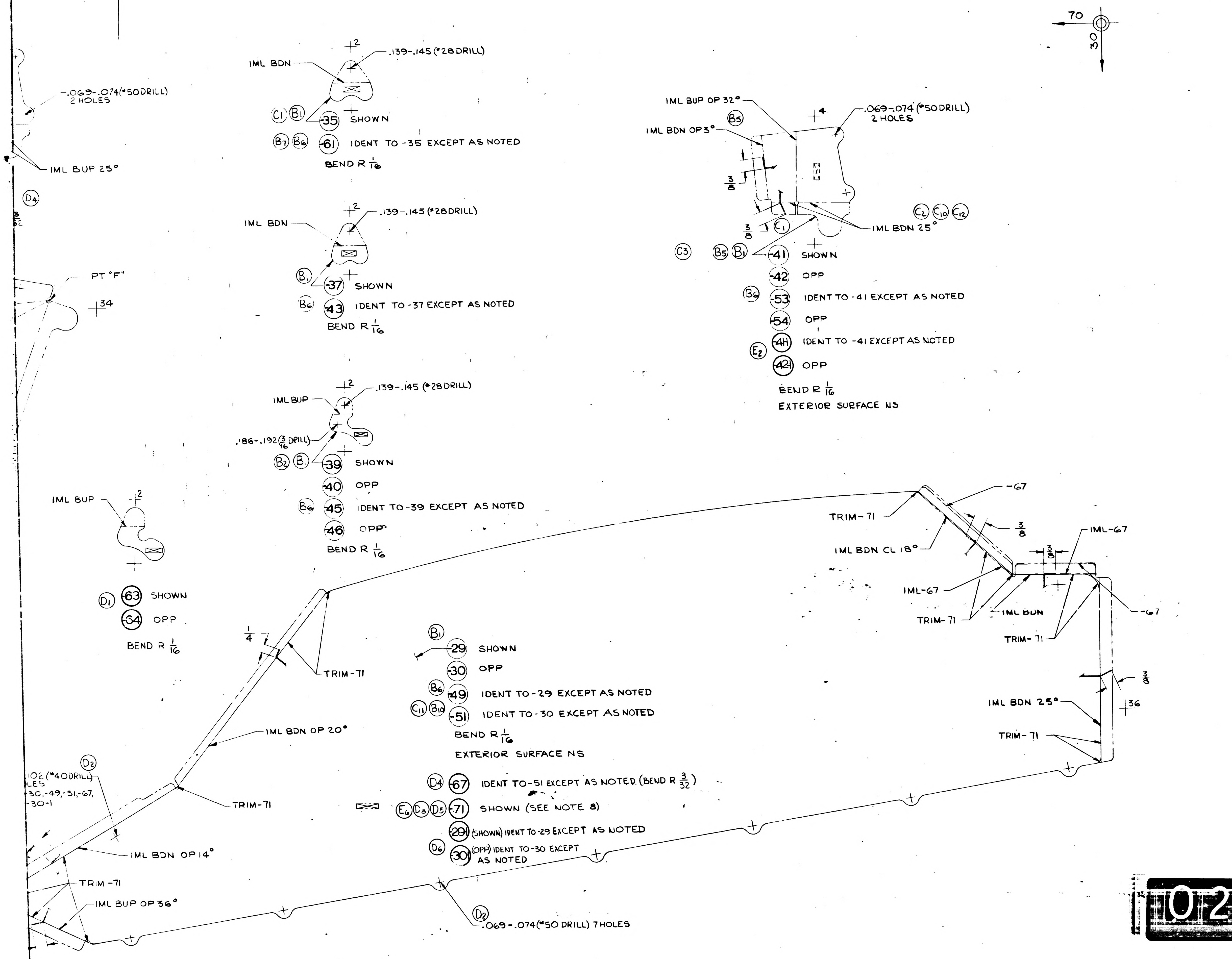
D6 -271 (SHOWN) IDENT TO -27 EXCEPT AS NOTED

-281 (OPP) IDENT TO -28 EXCEPT AS NOTED

SECTION BK-BK

01/02 NAS 9-1100

LDW280-10779 SH 4


IML BDN
.139-.145 (#28 DRILL)
C1 B1 -35 SHOWN
B7 B6 -61 IDENT TO -35 EXCEPT AS NOTED
BEND R 1/16
.069-.074 (#50 DRILL) 2 HOLES
IML BUP 25°
D4
IML BDN
.139-.145 (#28 DRILL)
B1 -37 SHOWN
B6 -43 IDENT TO -37 EXCEPT AS NOTED
BEND R 1/16
PT "F"
34
IML BUP
.139-.145 (#28 DRILL)
.186-.192 (3/16 DRILL)
B2 B1 -39 SHOWN
-40 OPP
B6 -45 IDENT TO -39 EXCEPT AS NOTED
-46 OPP
BEND R 1/16
IML BUP
D1 -63 SHOWN
-64 OPP
BEND R 1/16
IML BUP OP 32°
B5
.069-.074 (#50 DRILL) 2 HOLES
IML BDN OP 3°
3/8
3/8
C1
C2 C10 C12
IML BDN 25°
C3 B5 B1 -41 SHOWN
-42 OPP
B6 -53 IDENT TO -41 EXCEPT AS NOTED
-54 OPP
E2 -4H IDENT TO -41 EXCEPT AS NOTED
-424 OPP
BEND R 1/16
EXTERIOR SURFACE NS
70
30
-67
TRIM-71
3/8
IML-67
IML BDN CL 18°
3/8
IML-67
TRIM-71
IML BDN
TRIM-71
-67
3/8
IML BDN 25°
36
TRIM-71
1/4
TRIM-71
B1 -29 SHOWN
-30 OPP
B6 -49 IDENT TO -29 EXCEPT AS NOTED
C11 B10 -51 IDENT TO -30 EXCEPT AS NOTED
BEND R 1/16
EXTERIOR SURFACE NS
IML BDN OP 20°
D2
.102 (#40 DRILL)
HOLES
-30,-49,-51,-67,
-30-1
TRIM-71
D4 -67 IDENT TO -51 EXCEPT AS NOTED (BEND R 3/32)
E4 D8 D5 -71 SHOWN (SEE NOTE 8)
-291 (SHOWN) IDENT TO -29 EXCEPT AS NOTED
D6 -301 (OPP) IDENT TO -30 EXCEPT AS NOTED
IML BDN OP 14°
TRIM-71
IML BUP OP 36°
D2
.069-.074 (#50 DRILL) 7 HOLES

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.

FILLET AND INSIDE CORNER RADII TOLERANCES
.016R TO .062R ± .010
.063R TO .250R ± .015
OVER .250R ± .030

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.

MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES

125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10

200 FOR ALL DRILLED HOLES

REMOVE ALL BURRS. BREAK ALL EDGES .015-.031

INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS

SYMBOL √ DENOTES SURFACE TO BE MACHINED

UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.

TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X 88

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 98) = 24.5 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 6.5 SQ. FT.

PRINT TRIM LINE

02/02

NAS 9-1100

LDW280-10779 E

LDW280-10779 E

-10779 SH 4

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
	SIZE J	CODE IDENT NO. 26512	LDW280-10779	E
LM				
MODEL OR END ITEM	SCALE FULL		SHEET 4.00	

R 40762

9 FOR PHOTO REPRODUCTION K2 2FR

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
A	1	1.00, 2.00, 3.00 & 1.10						EO-A1	ADDED SH 1.10; SH 1 OF 4 WAS 1 OF 3; REMOVED -11, -12, -13, -14, -15, -16, -17, -18, -19 & -20, FROM LTA-8. ADDED -21, -22, -23, -24, -25, -26, -27, -28, -29 & -30	LTA-8 (18)		✓ RL	SIBILLA 7.9.66		
B	1	1, 1.10, 2 & 3.00						E.O. B1	DELETED LDW280-11310 FINISH FROM NOTE 6 & REPLACED WITH LDW280-11367. ADDED FINISH NOTE 6 EFF TO LDW280-10780-21, -22, -23, -24, -25 & -26	LTA-8 (16)	✓		R. NISBET 8-25-66		
	2	1.10, 3.00						E.O. B2	FOR -17, -18, -19, -20, -27, -28, -29, -30 REPOSITIONED 4 HOLES.	LTA-8 & LEM -1 THRU -6	✓				
	3	1.10, 2.00 & 3.00							REF E.O. B1 NOTE 6 SHOULD BE NOTE 4	LTA-8	NOT	REQD			
C	1	1.00 1.10 2.00 & 3.00						EO C1	IN F/D ADDED CREASE LINES TO -25 & -26. CANCELLED -11 THRU -20 REMOVED LM-1 THRU LM-6 EFF. ADDED LM-1 & LM-2 EFF TO -21 THRU -30. REPLACED LDW280-11310 WITH .010 x 2024T3, QQ-A-250/5 ALCLAD FOR -21 THRU -26. REPLACED NOTE 6 WITH FINISH #76 & NOTE 3 FOR EXTERIOR SURFACES OF -21 THRU -30.	LTA-8 LM-1 THRU LM-6	✓	-11 THRU -20	HERB. SCHWETER 3-10-67		
	2							EO C2	EO C2 CANCELLED BY EO C5	NOT REQD	NOT	REQD			
	3							EO C3	EO C3 CANCELLED BY EO C5						
	4	1.00, 1.10, 2.00 & 3.00						EO C4	ADDED -31 THRU -40. REMOVED LM-1 & LM-2 EFF FROM -21 THRU -30	LM-1 THRU LM-15		✓			
	5	3.00						EO C5	ADDED NOTE 5 CANCELLED EO C2 & C3	LTA-8	✓				
	6	1.10 3.00						EO C6	ADDED EO TO RECORD BLOCK FOR LTA-8. TRIMMED -21, -22, -23, -24, -25 & -26	LTA-8 LM-1 & -2	✓				
	7	1.00, 1.10 2.00 & 3.00						EO C7	REF EO C6 -31 THRU -36 WAS -21 THRU -26, RESP. IN EFF BLK LM-1 THRU LM-15 WAS LM-1, LM-2. REMOVED RECORD EO PORTION FOR LTA-8.	LM-1 THRU LM-15	NOT	REQD			
	8								REF EO C1 NOTE 6 SHOULD BE NOTE 4 SEE B CHANGE ITEM 3	NOT REQD	NOT	REQD			
	9	3.00		LCD 19-1108			✓		Ⓡ ADDED .069-.074 (#50 DRILL) (2) HOLES TO -31 THRU -36	LM-1 THRU LM-15	✓				

CHG APPROVED

LTR	GROUP LDR	VEH.DES.INT.	STRUCTURES	STRUCTURES	WEIGHTS
A	—	Pusateri 9/6			
B	—	Pusateri 9/6			9/25
C	—	Pusateri 3/27/67	JV 3/27		

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10780	C
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

LDW280-10780 D

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 126	LDW280-28244	LTA-8(18)	1 EA

PART NO. LDW280-10780-21-1,-22-1,-23-1,-24-1,-25-1,-26-1,-27-1,-28-1,-29-1 & -30-1
GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28244	LTA-8(18)	1 EA

PART NO. LDW280-10780-21,-22,-23,-24-25-26,-27-28,-29 & -30
GAEC SCH NO. 30

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28244	LM-15(45)	1 EA
		LM-14(44)	1 EA
		LM-13(43)	1 EA
		LM-12(42)	1 EA
		LM-11(41)	1 EA
		LM-10(40)	1 EA
		LM-9(39)	1 EA
		LM-8(38)	1 EA
		LM-7(36)	1 EA
		LM-6(36)	1 EA
		LM-5(35)	1 EA
		LM-4(34)	1 EA
		LM-3(33)	1 EA
		LM-2(32)	1 EA
LM	LDW280-28244	LM-1(31)	1 EA

PART NO. LDW280-10780-31,-32,-33,-34,35,-36,-37,-38,-39 & -40
GAEC SCH NO. 30

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV	D	C	D	D						
SHEET		1.11								
REV		D								
SHEET										
REV										

LAST SECT LTR USED K
LAST DASH NO. USED -40

GRUMMAN REL INFO D
PRIM NO. JK(001) 215 MP-16D-5-22-68

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS — ANGLES ±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II
DRAWN BY SUPPA 4-4-66
LAYOUT BY SHANLEY
CHECKED BY 4-7-66
GR LEADER
VEH DESIGN 4/13
STRUCTURES FEB 4/13
STRUCTURES 4/13
WEIGHTS 4-12
PROJ ENGR 4-19-66
REL GROUP G. Caramanico 4-20-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

FRAME
ASCENT STAGE-CABIN THERMAL
SHIELD WINDOW

SIZE B
CODE IDENT NO. 26512
LDW280-10780 D
SCALE NONE
SHEET 1.00 OF 5

REV "D" CDK 5-22-68

NG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
D	1	1.11, 3.00			✓			LEO280-577	ADDED NOTE 7 , ADDED SH 1.11	LTA-8, LM-1 THRU LM-15	NOT	REQD	J. AVILES 4-27-68		
	2	1.11, 3.00					✓	EO D2	REVISED TRIM OF -31 THRU -36	LM-3 THRU LM-15	✓				
	3	1.00, 1.11 2.00, 3.00		LFM 126		✓		LCD1021-33	ADDED -21-1, -22-1, -23-1, -24-1, -25-1, -26-1, -27-1, -28-1, -29-1, -30-1, AND NOTE 8	LTA-8	NOT	REQD		5/22/68	5-22-68

LTR	GR LEADER	VEH. DES. INT.	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY	THERMO
D	5/14	5/15	5/10/68	for FEB			5/10/68

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10780	D
SCALE NONE			SHEET 1.11

ENG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		401-B2		PAINT(GREY)	ANTI-GLARE	FED.STD.COLOR#36231					
		LDW280-10780-30-1	E	CORNER	AL ALLOYSH	QQ-A-250/4	2024-T3	.020X4X5	NONE	76 & NOTE 8	
		-29-1		↕	↕	↕	↕	.02X4X5	↕	↕	
		-28-1		↕	↕	↕	↕	.020X3X5	↕	↕	
		-27-1		CORNER	AL ALLOY SH	QQ-A-250/4	2024-T3	.020X3X5	NONE	76 & NOTE 8	
		-26-1		FRAME	MAKE FROM	LDW280-11	310-13-4	6X32	NONE	NONE	
		-25-1		↕	↕	↕	↕	6x32	↕	↕	
		-24-1		↕	↕	↕	↕	6x36	↕	↕	
		-23-1		↕	↕	↕	↕	6x36	↕	↕	
		-22-1		↕	↕	↕	↕	7x32	↕	↕	
		-21-1		FRAME	MAKE FROM	LDW280-11	310-13-4	7X32	NONE	NONE	
		-30	E	CORNER	AL ALLOY SH	QQ-A-250/5	ALCLAD 2024	.020X3 1/2X4 1/2	T3/T42	76 & NOTE #5	
		-29	↕	↕	↕	↕	↕	.020X3 1/2X4 1/2	T3/T42	↕	
		-28	↕	↕	↕	↕	↕	.020X2 5/8X4 1/8	T3/T42	↕	
		-27	↕	CORNER	↕	↕	ALCLAD 2024	.020X2 5/8X4 1/8	T3/T42	↕	
		-26	↕	FRAME	↕	↕	ALCLAD 2024-T3	.010x5 5/8x31 1/8	NONE	↕	
		-25	↕	↕	↕	↕	↕	.010x5 5/8x31 1/8	↕	↕	
		-24	↕	↕	↕	↕	↕	.010x5 5/8x35 1/2	↕	↕	
		-23	↕	↕	↕	↕	↕	.010x5 5/8x35 1/2	↕	↕	
		-22	↕	↕	↕	↕	↕	.010x6 1/4x31 7/8	↕	↕	
		-21	↕	FRAME	↕	↕	ALCLAD 2024-T3	.010x6 1/4x31 7/8	↕	76 & NOTE #5	
		-40	↕	CORNER	↕	↕	2024-T4	.020x3 1/2x4 1/2	↕	88 & NOTE #6	
		-39	↕	↕	↕	↕	↕	.020x3 1/2x4 1/2	↕	↕	
		-38	↕	↕	↕	↕	↕	.020x2 5/8x4 1/8	↕	↕	
		-37	↕	CORNER	↕	↕	2024-T4	.020x2 5/8x4 1/8	↕	88 & NOTE #6	
		-36	↕	FRAME	↕	↕	2024-T3	.010x5 5/8x31 1/8	↕	76 & NOTE #6	
		-35	↕	↕	↕	↕	↕	.010x5 5/8x31 1/8	↕	↕	
		-34	↕	↕	↕	↕	↕	.010x5 5/8x35 1/2	↕	↕	
		-33	↕	↕	↕	↕	↕	.010x5 5/8x35 1/2	↕	↕	
		-32	↕	↕	↕	↕	↕	.010x6 1/4x31 7/8	↕	↕	
		LDW230-10780-31	E	FRAME	AL ALLOY SH	QQ-A-250/5	2024-T3	.010x6 1/4x31 7/8	NONE	76 & NOTE #6	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						76	ALODINE	LSP14-5010
							PAINT	LSP14-4503

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

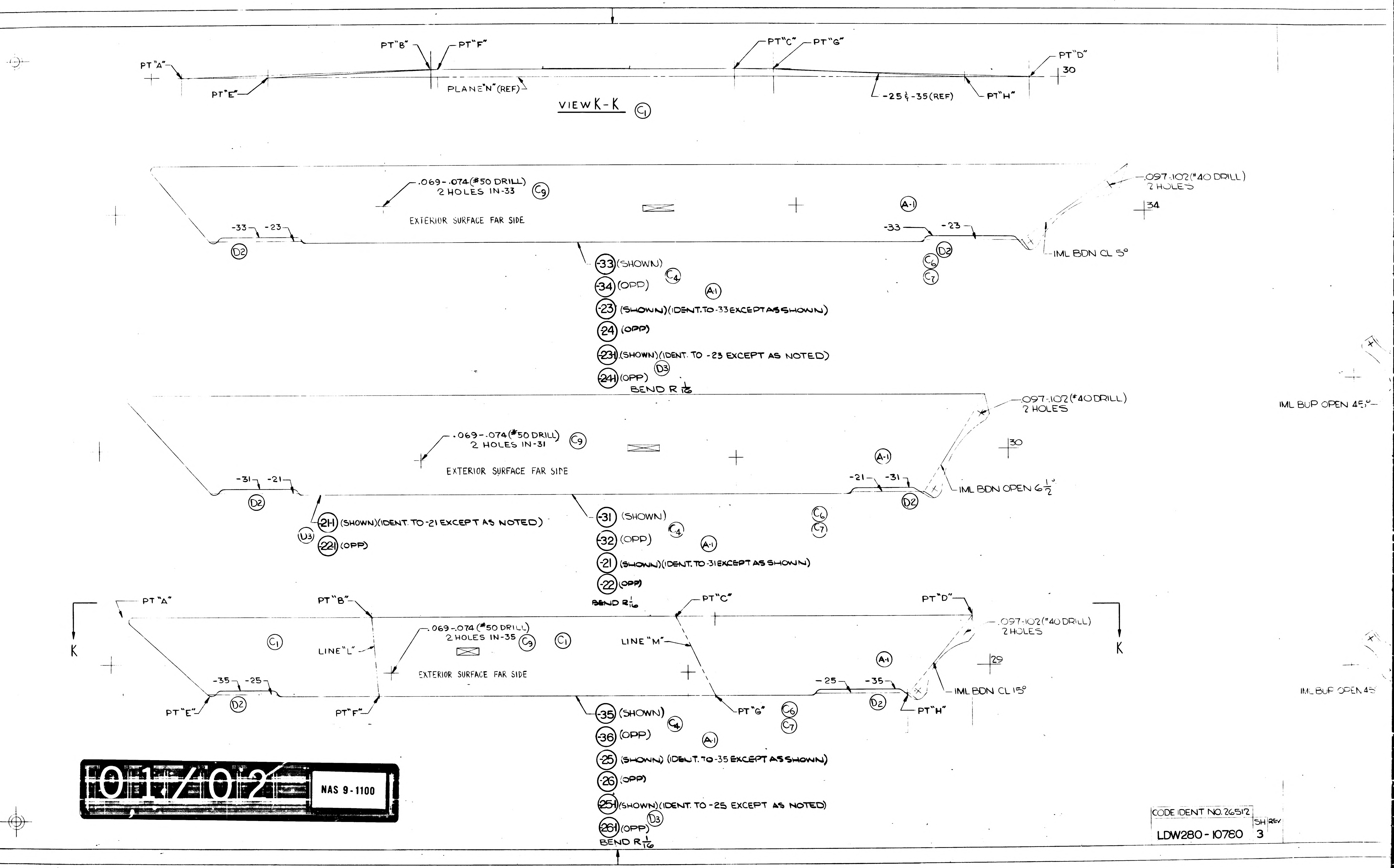
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10780	D
SCALE NONE			SHEET 200

NG 77.2 7-65

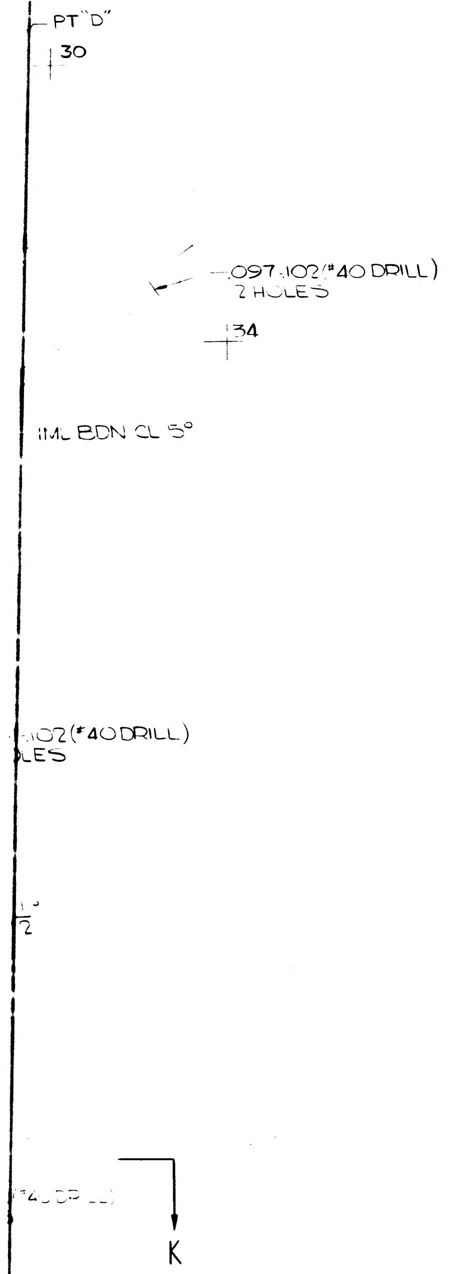
01

NAS 9-1100


PT "A"
PT "B"
PT "F"
PT "C"
PT "G"
PT "D"
30
PT "E"
PLANE "N" (REF)
-25 1/4 -35 (REF)
PT "H"
VIEW K-K
C1
.069-.074 (#50 DRILL)
2 HOLES IN-33
C9
EXTERIOR SURFACE FAR SIDE
A-1
.097-.102 (#40 DRILL)
2 HOLES
34
-33
-23
D2
C6
C7
IML BDN CL 5°
-33 (SHOWN)
C4
-34 (OPP)
A-1
-23 (SHOWN) (IDENT. TO -33 EXCEPT AS SHOWN)
-24 (OPP)
-231 (SHOWN) (IDENT. TO -23 EXCEPT AS NOTED)
D3
-241 (OPP)
BEND R 1/16
.097-.102 (#40 DRILL)
2 HOLES
IML BUP OPEN 45°
.069-.074 (#50 DRILL)
2 HOLES IN-31
C9
30
EXTERIOR SURFACE FAR SIDE
A-1
-31
-21
D2
IML BDN OPEN 6 1/2°
-211 (SHOWN) (IDENT. TO -21 EXCEPT AS NOTED)
D3
-221 (OPP)
-31 (SHOWN)
C4
C6
C7
-32 (OPP)
A-1
-21 (SHOWN) (IDENT. TO -31 EXCEPT AS SHOWN)
-22 (OPP)
BEND R 1/16
PT "A"
PT "B"
PT "C"
PT "D"
K
K
C1
.069-.074 (#50 DRILL)
2 HOLES IN-35
C9
C1
LINE "L"
LINE "M"
.097-.102 (#40 DRILL)
2 HOLES
29
A-1
EXTERIOR SURFACE FAR SIDE
-35
-25
D2
IML BDN CL 15°
IML BUP OPEN 45°
PT "E"
PT "F"
PT "G"
PT "H"
-35 (SHOWN)
C4
C6
C7
-36 (OPP)
A-1
-25 (SHOWN) (IDENT. TO -35 EXCEPT AS SHOWN)
-26 (OPP)
-251 (SHOWN) (IDENT. TO -25 EXCEPT AS NOTED)
D3
-261 (OPP)
BEND R 1/16

01/02 NAS 9-1100

CODE IDENT NO. 26512
LDW280-10760
SH 3
REV


PT "D"
30
.097-.102 (#40 DRILL)
2 HOLES
34
IML BDN CL 5°
.102 (#40 DRILL)
LES
K

Trans

NOTES:

1- NO TOOLING HOLES PERMITTED IN PARTS.

2- ~~THE INTERIOR SURFACE OF -11, -12, -13, -14, -15 & -16 TO BE CHEM-MILLED IN ACCORDANCE WITH LSP14-2010 FINISH ENTIRE PART #76 (LSP14-2010)~~

3. ~~FOR -11 THRU -20, PAINT SURFACE DESIGNATED 'EXTERIOR' WITH WHITE GREY PAINT FED STD COLOR #26231 PER LSP14-4503~~

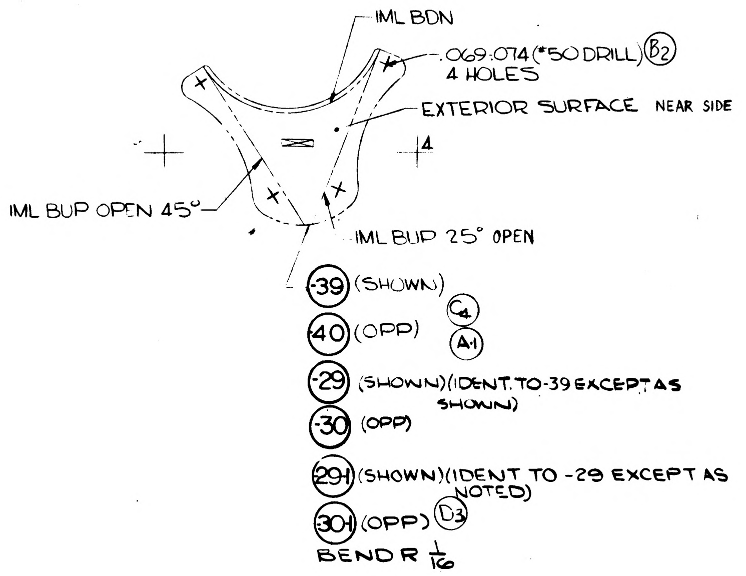
4: ~~FINISH LDW280-10780-21,-22,-23,-24,-25,-26,-27,-28,-29, & -30 PER LDW280-11367~~

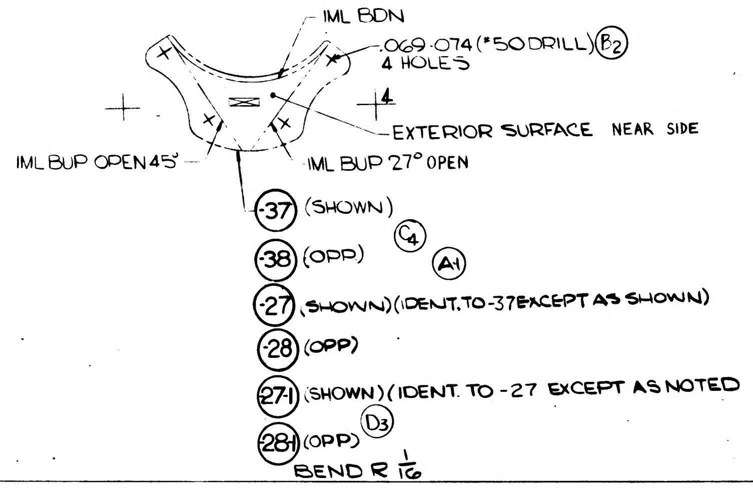
5. FOR -21,-22,-23,-24,-25,-26,-27,-28,-29 & -30, EXTERIOR SURFACE TO BE PAINTED WITH 401-B2 GRAY, FED STD COLOR #36231 PER LSP14-4503.

6. FOR -31,-32,-33,-34,-35,-36,-37,-38,-39 & 40, FINISH EXTERIOR SURFACES WITH "PYROMARK" BLACK PAINT PER LPC280-5.

7. MATERIAL, FINISHES, HANDLING & PERMISSIBLE DEVIATIONS OF LM ASCENT STAGE THERMAL SHIELD SKINS PER LPC280-16

8. FOR -27-1, THRU -30-1 FINISH EXTERIOR SURFACE WITH "SICON" 3X923 BLACK PAINT PER LPC280-12


IML BDN
.069-.074 (#50 DRILL) (B2)
4 HOLES
EXTERIOR SURFACE NEAR SIDE
4
IML BUP OPEN 45°
IML BUP 25° OPEN
-39 (SHOWN)
40 (OPP)
(C4)
(A1)
-29 (SHOWN) (IDENT. TO -39 EXCEPT AS SHOWN)
-30 (OPP)
29-1 (SHOWN) (IDENT TO -29 EXCEPT AS NOTED)
30-1 (OPP) (D3)
BEND R 1/16


IML BDN
.069-.074 (#50 DRILL) (B2)
4 HOLES
4
EXTERIOR SURFACE NEAR SIDE
IML BUP OPEN 45°
IML BUP 27° OPEN
-37 (SHOWN)
-38 (OPP)
(C4)
(A1)
-27 (SHOWN) (IDENT. TO -37 EXCEPT AS SHOWN)
-28 (OPP)
27-1 (SHOWN) (IDENT. TO -27 EXCEPT AS NOTED)
28-1 (OPP) (D3)
BEND R 1/16

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 28 X 32

PRINTING INFO ONLY
FULL SIZE SHEET AREA (30 X 12) = 19.5 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 5 SQ. FT.

PRINT TRIM LINE

LDW280-10780 D

LDW280-10780 D

02/02

NAS 9-1100

CODE IDENT NO. 26512	SH	REV
LDW280-10780	3	

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE H	CODE IDENT NO. 26512	LDW280-10780	D
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION B K2

2FR.

LDW280-10781 C

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28244	LM-15(45)	2
		LM-14(44)	2
		LM-13(43)	2
		LM-12(42)	2
		LM-11(41)	2
		LM-10(40)	2
		LM-9(39)	2
		LM-8(38)	2
		LM-7(37)	2
		LM-6(36)	2
		LM-5(35)	2
		LM-4(34)	2
		LM-3(33)	2
		LM-2(32)	2
LM	LDW280-28244	LM-1(31)	2

PART NO. LDW280-10781-13 GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM126	LDW280-28244	LTA-8(18)	2

PART NO. LDW280-10781-11-1 GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28244	LTA-8(18)	2

PART NO. LDW280-10781-11 GAEC SCH NO. 30-

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	C	C	C	C					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -13

GRUMMAN REF INFO C

PRIM NO. 215 JL(001) MP-16C-3/10/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	SUPPA 4-6-66	THERMO	M Tam 5-26
LAYOUT BY	SHANLEY		
CHECKED BY	M 4-7-66		
GR LEADER			
VEH DES INT	4/13		
STRUCTURES	4/13	PROJ ENGR	5-4
STRUCTURES	4/13	REL GROUP	Botti 5-6-66
WEIGHTS	4/13		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CORNER
ASCENT STAGE - CABIN - THERMAL - SHIELD WINDOW

SIZE B CODE IDENT NO. 26512 LDW280-10781 C

SCALE NONE SHEET 1.00 OF 4

REV. C 5-22-68

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
A	1	1,1.10,3						EO A1	FOR -11 REPOSITIONED 4 HOLES SH 1 OF 4 WAS SH 1 OF 3 ADDED SH 1.10	LTA-8 LEM-1 THRU-6	✓		KLUGE 8-23-66		
B	1	1.00						EO B1	REMOVED LM-3 THRU LM-6 EFF FROM-11	LM-3 THRU LM-6		-11	HERB SCHWETER 6-2-67		
	2	1.10						EO B2	EO B2 CANCELLED BY EO B5	NOT REQD	NOT	REQD			
	3	1.00						EO B3	CANCELLED BY EO B5						
	4	1.00 2.00 3.00						EO B4	ADDED NOTE # 3, ADDED -13, IN M/B FOR -11, REMOVED LM-1, LM-2 & (2) REQD PER VEH. WAS (4) REQD PER VEH.	LM-1 THRU LM-15	✓	-11			
	5	1.10						EO B5	CANCELLED EO B2 & B3	NOT REQD	NOT	REQD		5/8/68	
C	1	3.00			✓			LE0280-502	ADDED NOTE 4	LTA-8, LM-1 THRU LM-15	✓		BEN AZZARA 4-29-68		
	2	1.00,2.00		LFM126		✓		LCD1021-33	ADDED -11-1 & NOTE 5	LTA-8(18)	NOT	REQD			

CHG APPROVED LTR	GROUP LDR	VDI	STRUCT.	STRUCT.	WEIGHT	THERMO
A						
B						
C	5/6/68	5/7/68	5/7/68			

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10781	C
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		401-B2		PAINT (GREY)	PAINT	FED. STD. COLOR #36231					
		LDW280-10781-11-1	E	CORNER	AL ALLOY SH	QQ-A-250/4	2024-T3	.020× 4 × 5	NONE	NOTES	
		LDW280-10781-13	E	CORNER	AL ALY SH	QQ-A-250/4	2024-T3	.020×3⅜×4½	NONE	88	
		LDW280-10781-11	E	CORNER	AL ALLOY SH	QQ-A-250/4	2024-T3	.020×3⅜×4½	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
							PAINT	LSP14-4503
							PAINT	LCP 280-5
						76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10781	C

SCALE NONE SHEET 2.00

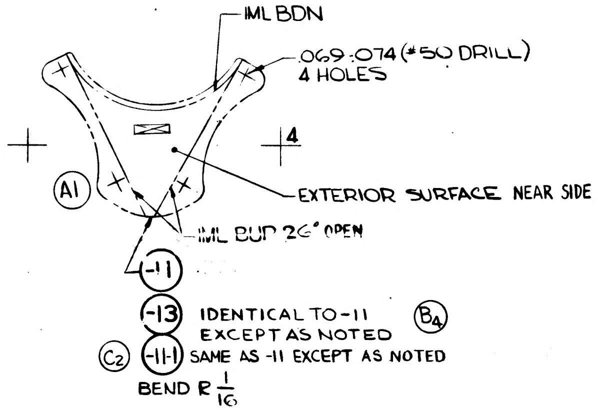
ENG 77.2 7-65

01

NAS 9-1100

NOTE

1. NO TOOLING HOLES PERMITTED IN PART.
2. FOR -11 PAINT SURFACE DESIGNATED EXTERIOR WITH 401-B2 GREY PAINT, FED STD COLOR #36231 PER LSP14-4503.
3. FINISH EXTERIOR SURFACES OF -13 WITH "PYROMARK" BLACK PAINT PER LPC280-5.
4. MATERIAL, FINISHES, HANDLING & PERMISSIBLE DEVIATIONS PER LPC-280-16.
5. ALODINE BOTH SURFACES OF -11-1 PER LSP-14-9010 THEN FINISH EXTERIOR SURFACES OF -11-1 WITH "SICON" 3×923 BLACK PAINT PER LPC280-12.


IML BDN
.069:.074 (#50 DRILL) 4 HOLES
4
A1
EXTERIOR SURFACE NEAR SIDE
IML BUP 26° OPEN
-11
-13 IDENTICAL TO -11 EXCEPT AS NOTED
B4
C2
-11-1 SAME AS -11 EXCEPT AS NOTED
BEND R 1/16

01

NAS 9-1100

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ƒ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	C	26512	LDW280-10781	C
SCALE FULL			SHEET 3.00	

FOR PHOTO REPRODUCTION 1 B K2

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

LEM	LDW280-28220	LEM-2(32)	8
LEM	LDW280-28220	LEM-1 (31)	8
LEM	LDW280-28220	ITA-8(18)	8
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10782-11		GAEC SCH NO. 312	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-11

GRUMMAN REL INFO

PRIM NO.	LE(001)		
215	PP12		

ENG 77.1 9-64

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100 LINE ITEM #1 DOCUMENTATION TYPE II

DRAWN BY	SUPPA-1-10-66	RELIABILITY	—
LAYOUT BY	L.B.GRANT		
CHECKED BY	LM 1-17-66		
GR LEADER	J. PUSATERI 1/18/66		
VEH DES INT	[illegible] 1/21/66		
STRUCTURES	[illegible] BW 1-24	PROJ ENGR	[illegible] 1/28
STRUCTURES	Hilderman 1-25	REL GROUP	[illegible] 1/29
WEIGHTS	W.D. Mandias 1-26		

(B) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLAMP
ASCENT STAGE-STA-+Z42.437

SIZE	CODE IDENT NO.	
B	26512	LDW280-10782

SCALE NONE SHEET 1.00 OF 3

01

NAS 9-1100

QTY PER ASSEMBLY						CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
							LDW280-10782-11	E	CLAMP	AL ALLOY SH	QQ-A-283	7075	.020x1 3/8x3 3/4	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10782

SCALE NONE SHEET 2.00

ENG 77.2 7-65

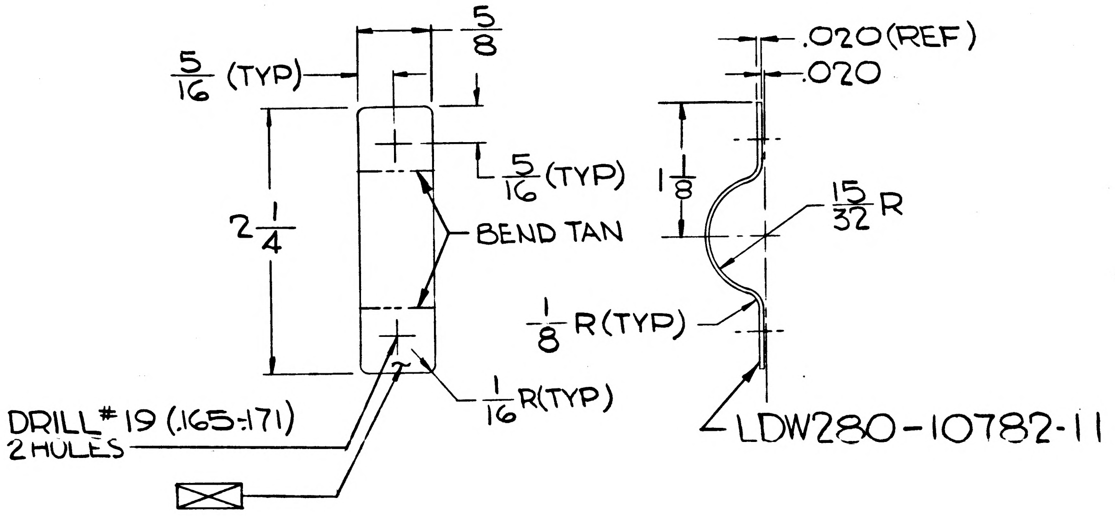
01

NAS 9-1100

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

RUBBERSTAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY	✓

NOTES:
1- NO TOOLING HOLES PERMITTED IN PARTS



5/8
5/16 (TYP)
5/16 (TYP)
2 1/4
BEND TAN
1/16 R(TYP)
DRILL #19 (.165-.171)
2 HOLES
⊠
.020(REF)
.020
1 1/8
15/32 R
1/8 R(TYP)
LDW280-10782-11

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10782	
SCALE FULL		SHEET 3.00	

ENG 73.1 6-64

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53051	LM-3(33)	1
PN LDW280-10783-23			
LM	LDW280-54051	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
	LDW280-54051	LM-4(34)	1
LM	LDW280-53051	LM-3(33)	1

PART NO. LDW280-10783-21

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54051	LM-15(45)	1 EA
		LM-14(44)	1 EA
		LM-13(43)	1 EA
		LM-12(42)	1 EA
		LM-11(41)	1 EA
		LM-10(40)	1 EA
		LM-9(39)	1 EA
		LM-8(38)	1 EA
		LM-7(37)	1 EA
		LM-6(36)	1 EA
		LM-5(35)	1 EA
LM	LDW280-54051	LM-4(34)	1 EA

PART NO. LDW280-10783-17 & -19

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54051	LM-15(45)	4
		LM-14(44)	4
		LM-13(43)	4
		LM-12(42)	4
		LM-11(41)	4
		LM-10(40)	4
		LM-9(39)	4
		LM-8(38)	4
		LM-7(37)	4
		LM-6(36)	4
		LM-5(35)	4
	LDW280-54051	LM-4(34)	4
	LDW280-53051	LM-3(33)	4
	LDW280-28051	LM-2(32)	4
	LDW280-28051	LM-1(31)	4
	LDW280-23051	LTA-3(13)	4
LM	LDW280-28051	LTA-8(18)	4

PART NO. LDW280-10783-11

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO B	
LAST DASH NO. USED	-23	PRIM NO.	JK(00)
		215	ME-3B-10/2-1/

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES
±1/32 ±.010 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	R. FINGER 12-29-65	RELIABILITY	
LAYOUT BY	R. FINGER 12-29-65		
CHECKED BY			
GP. LEADER	J.A.P. ES 12-29-65		
VEH DES. INT.	T.C.F. for W. BISCHOFF 12-29		
STRUCTURES	BW 12-29-65	PROJ ENGR	KRAFT 12-29-65
STRUCTURES	HILDERMAN 12-29	REL GROUP	A. CARAMANICA
WEIGHTS	D. ROBESCH 12-29-65		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

RADIUS BLOCK
ASCENT STAGE ~ CABIN ~ FRONT FACE

SIZE	CODE IDENT NO.		
B	26512	LDW280-10783	B
SCALE	NONE	SHEET 1.00	OF 4

ENG 77.1 9-64

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	~~SH CHG LTR~~	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
												REWORK	SCRAP			
										RETRACED NO CHG LAST REV NO CHG. T. FREDA 1-20-66				T. FREDA 1-20-66		
A	1	1&1.10							EO A1	ADDED SH 1.00, 1.10 & 2.00. SH 1.00 OF 4 WAS SH 1.00 OF 1. IN MOD BLK FOR -11, ADDED LTA-3, LEM-3(33), LEM-4(34), LEM-5(35) & LEM-6(36) EFF.	NOT REQD LTA-3, LEM-3, -4-5 & -6	NOT ✓	REQD	L. Dixon 4-15-66		
	2	1.10							E.O. A2	CANCELLED BY E.O. A3	NOT REQD	NOT	REQD	ERICKSON 7-21-66		
	3	1.10							E.O. A3	CANCELLED E.O. A2.	NOTED					
										RETRACED SH 3.00 NO CHG LAST REV NC (SH SIZE C WAS B) LOFTED DWG WAS DIMENSIONED J. LONG 4-30-68						
	1	1.00							LE0280-294	FOR -11 ADDED LM-7 THRU LM-15	LM-7(37) THRU LM-15(45)			J. LONG 10-17-68		
	2	1.00 2.00 3.00					✓		EO B2 LCD1368 LCD2063	ADDED -13, -15, -17 & -19.	LM-3(33) THRU LM-15(45)					
B	3	3.00					✓		EO B3 LCD1368 LCD2063	REF EO B2. ON -13, -15 & -17 23/32 WAS 19/32 & 29/32 WAS 19/32		NOT	REQD			
	4	1.00 2.00 3.00						✓	EO B4	IN FLD B/M & M/B CREATED -21 DELETED -13			-13			
	5				M			✓	EO B5 LCD1078	IN F/D & B/M: REMOVED: -15 ADDED: -23 W.C. [illegible] 10/26/68	LM-3(33)		-15			

LTR	GROUP LDR	VEH. DES. INT.	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY	PROJ. ENGR	REL. GROUP			
B											

FOR CONTINUATION OF REVISIONS SEE SHEET

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10783	B
SCALE	NONE		SHEET 1.10

ENG 77.3 5-64

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10783-23	E	RADIUS BLOCK	AL ALLOY SH	QQ-A-250/12	7075-T6	.090X 2 X 5	NONE	88	
		-21						.090X 2X 5			
		-19						.090X 2 x 5			
		-17						.090X2x5			
		LDW280-10783-11	E	RADIUS BLOCK	AL ALLOY SH	QQ-A-250/12	7075-T6	.100X2 x 2	NONE	38	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						38	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10783	B

③

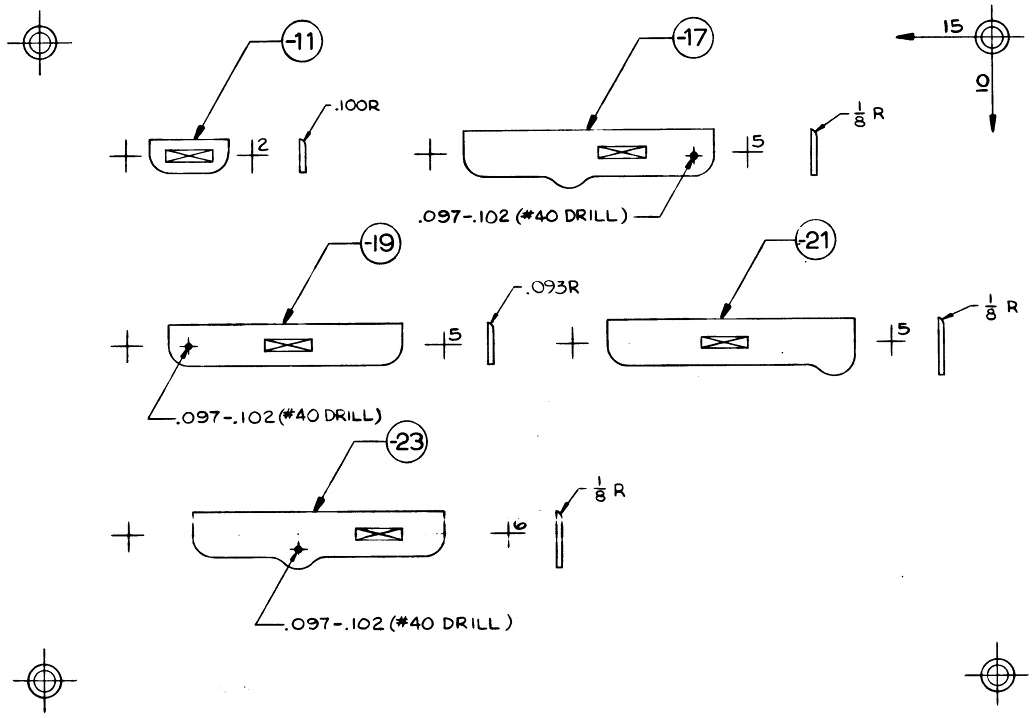
SCALE NONE

SHEET 2 OC

ENG 77.2 7-65

01

NAS 9-1100



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LM	SIZE C	CODE IDENT NO. 26512	LDW280-10783	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR 3 PHOTO REPRODUCTION

2 SUPERSEDES LDW280-10783 N.C. 12-29-65

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW 280-54051	LEM-4(34)	1 EA
↑	LDW 280-54051	LEM-5(35)	1 EA
│	LDW 280-54051	LEM-6(36)	1 EA
↓	LDW 280-53051	LEM-3(33)	1 EA
LEM	LDW 280-23051	LTA-3(13)	1 EA
PART NO. LDW 280-10784-11-13		GAEC SCH NO. 31-3 SH. 2	

(3)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO	
LAST DASH NO. USED	13	PRIM NO.	LE(001)
		215	PP12

ENG 77.1 9-64

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9 1100

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY	GENTILE 1·3·66	RELIABILITY	
LAYOUT BY	E. STAHL 1/10/66		
CHECKED BY	M 1·8·66		
GRP. LEADER	J. PUSATERI 1/10/66		
VEH. DES. INT	F.K.R. for W. BISCHOFF 1-10-66		
STRUCTRUES	FES for SW 1-11	PROJ ENGR	[illegible] 1/15
STRUCTRUES	HILDERMAN 1/11	REL GROUP	W Martin 1/19/66
WEIGHTS	[illegible] 1-13		

®

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

GUSSET
ASCENT STAGE CABIN DOCKING WINDOW

SIZE	CODE IDENT NO.	
B	26512	LDW280-10784
SCALE	NONE	SHEET 1.00 OF 3

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10784-13	E	GUSSET	AL ALLOY SH	QQA 283	7075-T6	.040 × 3 × 4¼	NONE	88	
								LDW280-10784-11	E	GUSSET	AL ALLOY SH	QQA 283	7075-T6	.040 × 3¾ × 4¼	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10784

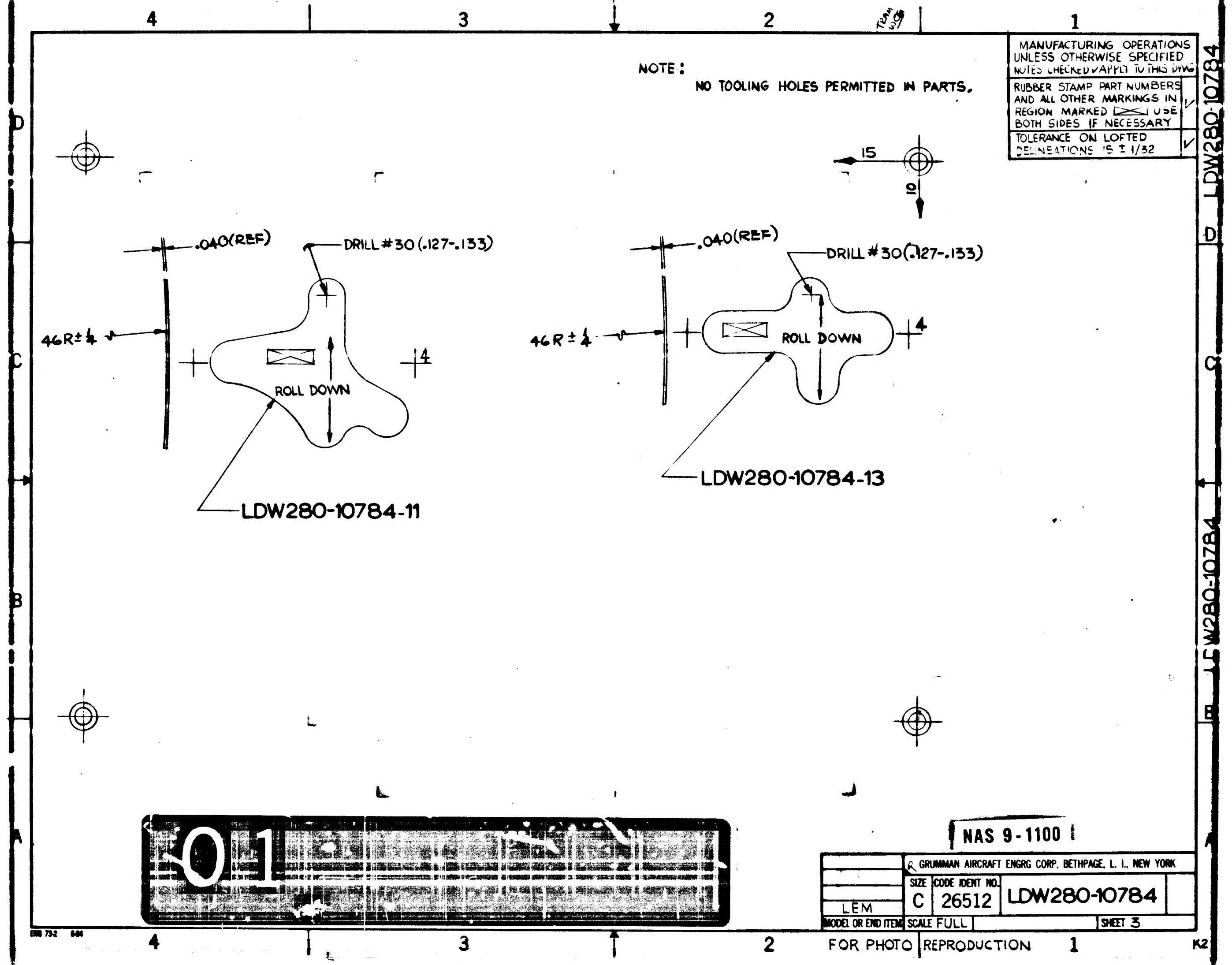
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


4
3
2
1
D
C
B
A
.040(REF)
DRILL #30 (.127-.133)
46R ± 1/4
4
ROLL DOWN
LDW280-10784-11
15
10
.040(REF)
DRILL #30 (.127-.133)
46R ± 1/4
4
ROLL DOWN
LDW280-10784-13
LDW280-10784
LDW280-10784
01
K2

NOTE:
NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG	
RUBBER STAMP PART NUMBERS AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY	✓
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK		
LEM	SIZE C	CODE IDENT NO. 26512	LDW280-10784
MODEL OR END ITEM	SCALE FULL		SHEET 3

FOR PHOTO REPRODUCTION

22

GRUMMAN AIRCRAFT ENGINEERING

CODE IDENT NO. 26512

ENGINEERING ORDER

ENG 32.2 REV 3-65

NO. LE0280 EO NO. 294

CONTROL INFO NO. LDW280 A0656

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS* THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4.34

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280- 10719	A1	SEE DRAWING
- 10720	A1	↑
- 10723	B1	
- 10724	A1	
- 10726	B1	
- 10727	A1	
- 10739	A1	
- 10740	A1	
- 10744	A1	
- 10745	A1	
- 10750	A1	
- 10751	C2	
H 10752	A1	
- 10753	A1	
- 10755	B2	
- 10757	B2	
- 10760	B1	
- 10765	B4	
- 10766	B1	
- 10767	C1	
- 10768	A1	
- 10770	A1	
- 10771	A1	
- 10783	B1	↓
- 10784	A1	
LDW280- 10788	B1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE: FR 10/17/66

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM-9(39)
LEM		LEM-10(40) LEM-11	(41) LEM-12(42)
LEM		LEM-13(43) LEM-14	(44) LEM-15(45)

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO

DISPOSITION OF PARTS: NOT REQ'D REWORK | SCRAP

APPROVED BY / DATE: 9/23/66 VL

GROUP LEADER: =

STRESS GROUP: 9-29

PROJ ENGRG: 10-17-66

GOVT: AC 10-3-66

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO.: LE0280

EO NO.: 294

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 35 EMA

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LDW420-11262	LDW280H23236	SER#16	1
LDW420-11262		SER#15	1
LDW420-11262		SER#14	1
LEM		LEM-15(45)	3
		LEM-14(44)	3
		LEM-13(43)	3
		LEM-12(42)	3
		LEM-11(41)	3
		LEM-10(40)	3
		LEM-9(39)	3
		LEM-8(39)	3
		LEM-7(37)	3
		LEM-6(36)	3
		LEM-5(35)	3
		LEM-4(34)	3
		LEM-3(33)	3
		LEM-2(32)	3
		LEM-1(31)	3
		LTA-3(13)	3
LEM	LDW280H23236	LTA-3(13)	3
PART NO. LDW280-10788-15		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LDW420-11262	LDW280H23234	SER#16	1 EA.
LDW420-11262		SER#15	1 EA.
LDW420-11262		SER#14	1 EA.
LEM		LEM-15(45)	1 EA
		LEM-14(44)	1 EA
		LEM-13(43)	1 EA.
		LEM-12(42)	1 EA.
		LEM-11(41)	1 EA
		LEM-10(40)	1 EA
		LEM-9(39)	1 EA
		LEM-8(38)	1 EA
		LEM-7(37)	1 EA
		LEM-6(36)	1 EA
		LEM-5(35)	1 EA
		LEM-4(34)	1 EA
		LEM-3(33)	1 EA
		LEM-2(32)	1 EA
		LTA-8(13)	1 EA
LEM	LDW280H23234	LTA-3(13)	1 EA
PART NO. LDW280-10788-11-13		GAEC SCH NO. 313	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	B	B			B				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	L-L	GRUMMAN REL^c INFO β	
		PRIM NO.	JK(001)
LAST DASH NO. USED	-15	215	ME-168-3/29/9

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM 1 | DOCUMENTATION TYPE II

DRAWN BY	SCHROEPPEL 1/20/66	RELIABILITY	
LAYOUT BY	BONELLI 1/12/66		
CHECKED BY	D.FASS 3-4-66		
GR LEADER	J. PUSETERI 3/25		
PREP DES INT	[illegible] 3/25		
STRUCTURES	[illegible] 3/25	PROJ ENGR	[illegible] 3-31-66
STRUCTURES	Hilderman 3/26	REL GROUP	Botts 4-1-66
WEIGHTS	[illegible] 3-30		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

WEB
ASCENT STAGE-CABIN FLOOR
X 213.0 & X 215.0

SIZE	CODE IDENT NO.		
B	26512	LDW280-10788	B
SCALE NONE		SHEET 1.00 OF 4	

(5)

ENG 77.1 9-64

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00 & 1.10						E.O.A1	ADDED SH. 1.10, SH 1 OF 4 WAS 1 OF 3 E.O.A1 SUPERSEDED BY E.O.A2	NOT REQD	NOT	REQ'D.	E.G. ERICKSON 6-8-66		
	2	1.00, 1.10 & 3.00						E.O.A2	SUPERSEDES E.O.A1., IN F/D. ON-11 & -13 ADDED #30 (2) EA. HOLES-ON-13., .092 (REF) WAS .087 (REF.); WAS .064 (REF)., REMOVED -15 FROM NOTE 2	LTA-3, -8 LEM-1, -2, -3, -4, -5 & -6	✓				
B	1	1.00							INC. LEO280-294	LEM-7 THRU LEM-15			W. MAMMES 3-3-69 E.C.G.		
	2	1.00							INC. LEO280-471	LM-3 THRU LM-15					
	3	1.00		LFM54 A					INC. LEO280-787	LM-3 THRU LM-15					
	4	1.00							INC. LEO280-1127	SER# 14					
	5	1.00							INC. LEO280-1130	SER# 15 & 16					
	6	3.00		LFM 54 A		✓		LCD 2011 LCD 2175 CCA 668 ②	REF LEO 280-787 (B3) ADDED NOTE 8	LM-1			H.D.	F. Zukas 3-20-69	

CHG APPROVED	LTR	GROUP LDR	VEH.DES.INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY				
	B										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

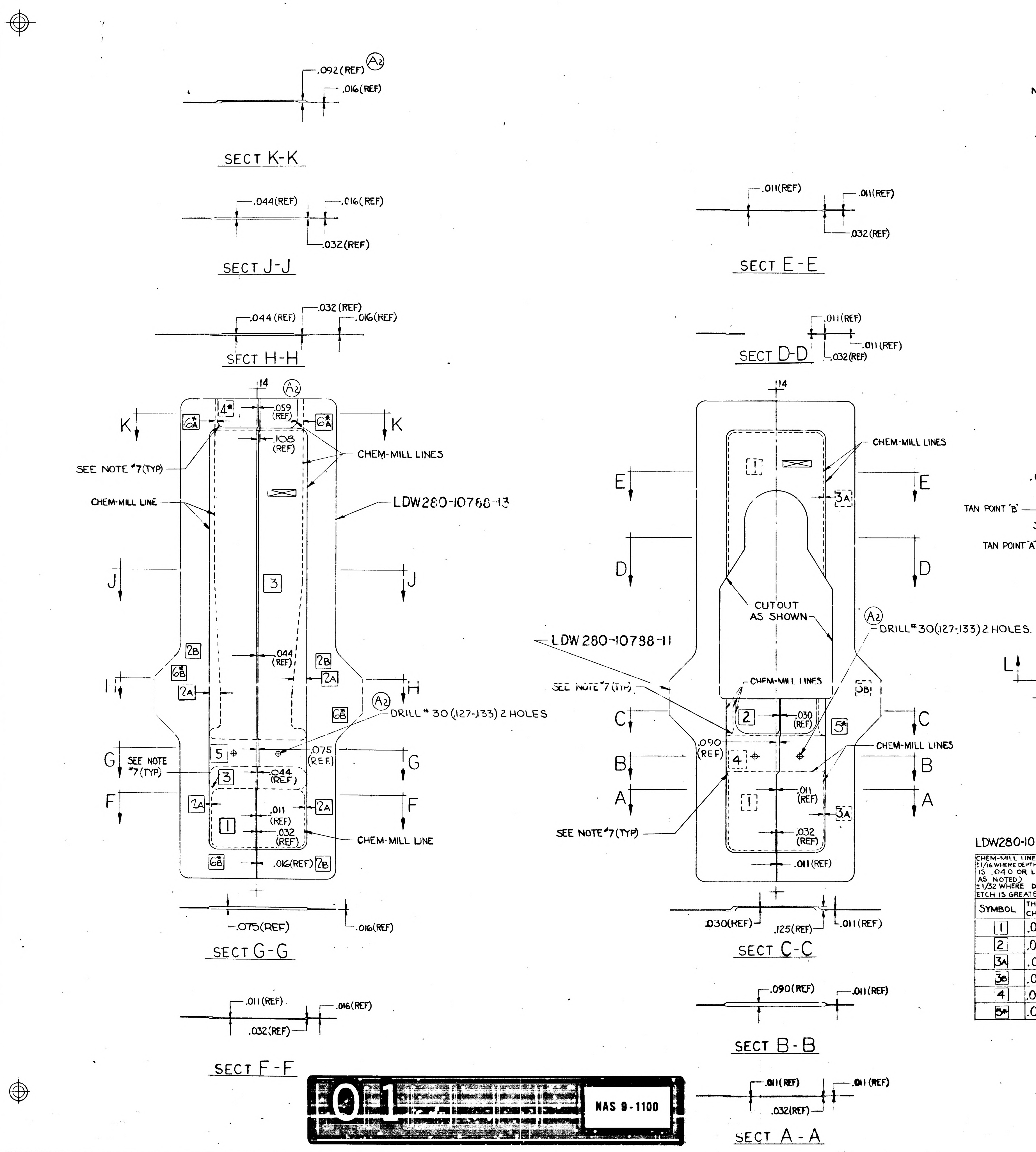
SIZE	CODE IDENT NO.		
B	26512	LDW280-10788	B

SCALE NONE SHEET 1.10 ③

ENG 77.16 3-66

01

NAS 9-1100


.092 (REF)
A2
.016 (REF)
SECT K-K
.044 (REF)
.016 (REF)
.032 (REF)
SECT J-J
.044 (REF)
.032 (REF)
.016 (REF)
SECT H-H
.011 (REF)
.011 (REF)
.032 (REF)
SECT E-E
.011 (REF)
.011 (REF)
.032 (REF)
SECT D-D
14
.059 (REF)
.108 (REF)
4*
6A*
K
SEE NOTE #7 (TYP)
CHEM-MILL LINES
CHEM-MILL LINE
LDW280-10788-13
3
J
.044 (REF)
2B
2A
6B*
I
H
DRILL # 30 (127-.133) 2 HOLES
G
SEE NOTE #7 (TYP)
5
.075 (REF)
3
.044 (REF)
F
2A
1
.011 (REF)
.032 (REF)
.016 (REF)
CHEM-MILL LINE
.075 (REF)
.016 (REF)
SECT G-G
.011 (REF)
.016 (REF)
.032 (REF)
SECT F-F
CHEM-MILL LINES
E
1
3A
D
CUTOUT AS SHOWN
LDW280-10788-11
DRILL # 30 (127-.133) 2 HOLES.
SEE NOTE #7 (TYP)
CHEM-MILL LINES
3B
C
2
.030 (REF)
5*
.090 (REF)
4
CHEM-MILL LINES
B
A
.011 (REF)
.032 (REF)
.011 (REF)
SEE NOTE #7 (TYP)
.030 (REF)
.125 (REF)
.011 (REF)
SECT C-C
.090 (REF)
.011 (REF)
SECT B-B
.011 (REF)
.011 (REF)
.032 (REF)
SECT A-A

01

NAS 9-1100

35

30

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.

2. WEIGHT OF CHEM-MILL WEBS AFTER FINAL TRIM (BUT BEFORE FASTENER HOLES ARE DRILLED) SHALL NOT EXCEED ——— POUNDS FOR -11
——— POUNDS FOR -13

3. THICKNESS OF RAW MATERIAL FOR -11 BEFORE ETCH SEQUENCE SHALL BE .125 ±.002. THICKNESS SHALL NOT VARY BY MORE THAN .002 TOTAL OVER ENTIRE SHEET.

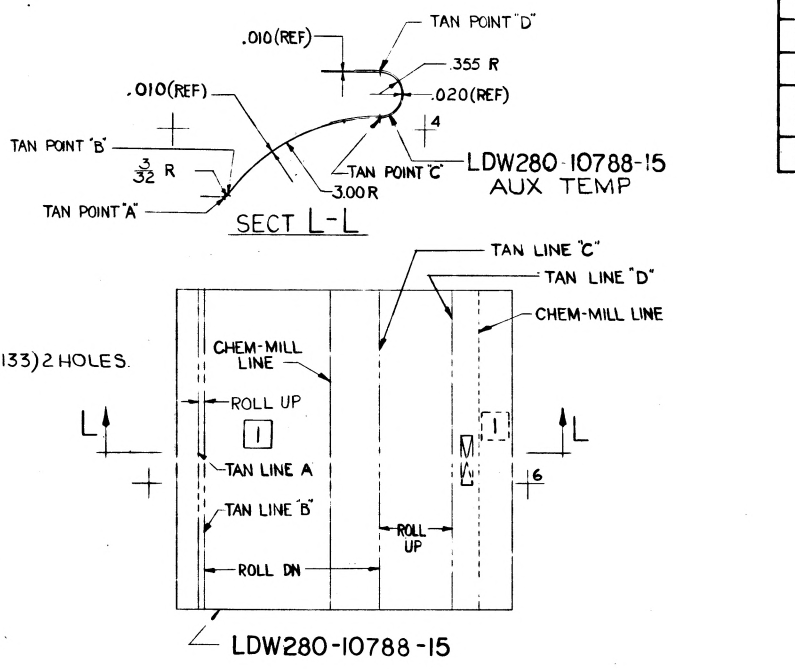
4. THICKNESS OF RAW MATERIAL FOR -13 BEFORE ETCH SEQUENCE SHALL BE .125 ±.003. SIZE SHEET STOCK TO .108 ±.003 THICKNESS SHALL NOT VARY BY MORE THAN .003 TOTAL OVER ENTIRE SHEET.

5. THICKNESS OF RAW MATERIAL FOR -15 BEFORE ETCH SEQUENCE SHALL BE .020 ±.003 THICKNESS SHALL NOT VARY BY MORE THAN .003 TOTAL OVER ENTIRE SHEET

6. THIS DRAWING CONTAINS PARTS TO BE BONDED IN A HONEYCOMB ASSEMBLY.

7. TOLERANCE ±.125 AT TANGENCY POINTS OF CHEM-MILL LINE CORNER RADII BETWEEN TWO ETCHED SURFACES.

8. THIS DWG AFFECTED BY THE FOLLOWING LFM SEE LFM FOR EFFECTIVITY & MODIFICATION. LFM # 54.


TAN POINT "D"
.010 (REF)
.355 R
.010 (REF)
.020 (REF)
TAN POINT "B"
3/32 R
4
TAN POINT "C"
3.00 R
LDW280-10788-15
AUX TEMP
TAN POINT "A"
SECT L-L
TAN LINE "C"
TAN LINE "D"
CHEM-MILL LINE
CHEM-MILL LINE
ROLL UP
1
L
TAN LINE A
TAN LINE "B"
ROLL UP
ROLL DN
6
LDW280-10788-15

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-10788-11

CHEM-MILL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	*DEPTH OF CUT
1	.011 +.004 -.000	.114 (REF)
2	.030 ±.005	.095 (REF)
3A	.032 +.003 -.002	.093 (REF)
3B	.011 +.003 -.003	.093 (REF)
4	.090 +.004 -.003	.035 (REF)
5*	.011 (REF)	.021 ±.005

LDW280-10788-13

CHEM-MILL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	*DEPTH OF CUT
1	.011 +.004 -.000	.097 (REF)
2A	.032 +.004 -.000	.076 (REF)
2B	.016 ±.005	.076 (REF)
3	.044 +.004 -.001	.064 (REF)
4*	.049 (REF)	.059 ±.005
5	.075 +.004 -.002	.033 (REF)
6A*	.092 (REF)	.016 ±.005
6B*	.016 (REF	.016 ±.005

LDW280-10788-15

CHEM-MILL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	*DEPTH OF CUT
1	.010 ± .002	.010 (REF)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	E	26512	LDW280-10788	B
	SCALE FULL			SHEET 3.00

FOR PHOTO REPRODUCTION

K3

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10788-15	E	SKIN	AL ALY SH	QQ-A-250/12	7075-T6	.020 x 8 x 8 1/4	CM	NONE	
		LDW280-10788-13	E	WEB	AL ALY SH	QQ-A-250/12	7075-T6	NOTE 4x8 7/8x16 3/8	CM	NONE	
		LDW280-10788-11	E	WEB	AL ALY SH	QQ-A-250/12	7075-T6	.125 x 8 7/8 x 16 3/8	CM	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
CM	CHEM-MILLING	LSP14-26100

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-10788
SCALE NONE
SHEET 2.00

ENG 77.2 7-66

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280
EO NO. 1475
CONTROL INFO NO. LDW280B8049

IN MOD BLOCK
REMOVE LM-15(45) EFF FROM FOLLOWING PARTS:

DWG NO.	DASH NO.	TITLE	NEXT ASSY	QUANT. REQD	COMAT	CHANGE EO. Nº
✓ LDW280M10714	-5	HOUSING-BEARING	LDW280H23232	1	M	B4
✓ LDW280M10715	-1	HOUSING-BEARING	LDW280H23233	1	M	A4
✓ LDW280M10716	-1	BEARING	LDW280H54060	1	M	A3
✓ LDW280M10717	-3	PIN	LDW280H54060	1	M	A3
✓ LDW280M10719	-3	TRUSS	LDW280H54060	1	M	B5
✓ LDW280M10722	-1 & -2	CHANNEL	LDW280H23235	1 EA	M	C1
✓ LDW280M10723	-1	FITTING	LDW280H23234	2	M	C1
✓ LDW280M10724	-3	FITTING	LDW280H23234	1	M	C1
✓ LDW280M10825	-1	CHANNEL	LDW280H23273	1	M	C5
✓ LDW280P10966	-13	CHANNEL	LDW280H23334	1	NM	B1
✓ LDW280-10620	-11-1	WEB	LDW280H54060	1	M	B6
✓ LDW280-10621	-17	WEB	LDW280H54060	1	M	B7
✓ LDW280-10788	-11 & -13 -15	WEB	LDW280H23234 LDW280H23236	1 EA 1	M	C1
LDW280-10816	-11 -13 & -15	CHANNEL	LDW280H23236	1 2 EA	M	B3
LDW280-10817	-11 & -13	CHANNEL	LDW280H54060	2 EA	M	B1
LDW280-10927	-11 & -19 -13, -15 & -17	SKIN	LDW280H23235	2 EA 1 EA	M	C1
LDW280-10955	-11 -13-1	PLATE	LDW280H23234 LDW280H54060	1 1	M	B1
LDW280-10979	-11	DOUBLER	LDW280H54060	1	M	B1
LDW280-11036	-15 & -17	BUMPER	LDW280H54060	2 EA	M	B3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD3587 PKG12 CCA1821 AMD#1	(5)

REASON FOR EO: PARTS NOT REQD FOR M.P

DESCRIPTION OF EO: (NOTED ABOVE)

GAEC EO RELEASE: 7-9-69; JK 7/10/69

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			✓

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY				FDV/W	CW			Both
DATE	7/7/69	7/7/69		7-2-69	7-8-69		7/8/69	7-10-69

PRIORITY: C

DRAWING TITLE: (NOTED ABOVE)

DRAWING NO.: LEO280-

EO NO.: 1475

7-25-69
ISSUED BY P MARTELLO X86048 SECTION VEH DES INT GROUP NO. 335 PL 25

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LFM #50	LTM280-26963	PA-1(47)	1 EA
LEM	LDW280-23215	LM-15(45)	1 EA
		LM-14(44)	1 EA
		LM-13(43)	1 EA
		LM-12(42)	1 EA
		LM-11(41)	1 EA
		LM-10(40)	1 EA
		LM-9(39)	1 EA
		LM-8(38)	1 EA
		LM-7(37)	1 EA
		LM-6(36)	1 EA
		LM-5(35)	1 EA
		LM-4(34)	1 EA
LEM	LDW280-23215	LM-3(33)	1 EA

PART NO. LDW280-10789-25,-26,-27, -28,-29,-31 & -32

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23215	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
		LM-4(34)	1
LEM	LDW280-23215	LM-3(33)	1

PART NO. LDW280-10789-19

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23215	LTA-3(13)	1 EA

PART NO. LDW280-10789-11,-13,-15 & -17 — GAEC SCH NO. 31-2

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	A	GRUMMAN REL INFO A	
LAST DASH NO. USED	-32	PRIM NO. 215	JK(001) ME-3A-12/1/66

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	P.SCHELL 3-1-66	RELIABILITY	
LAYOUT BY	DiVENNARO 3-18-66 ES		
CHECKED BY	3-9-66		
GR LEADER	J. PUSATERI 3/18/66		
VEH.DES.INT.	3/20		
STRUCTURES	3/22	PROJ ENGR	3-30-66
STRUCTURES	Hilderman 3/22	REL GROUP	Botti 3-31-66
WEIGHT	3-30		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

INTERCOSTAL
ASCENT STAGE-CABIN-REACTION
CONTROL SYSTEM SUPPORTS

SIZE	CODE IDENT NO.		
B	26512	LDW280-10789	A
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 9-64

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ________

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10 2.00, 3.00	7F					EOA1	TRIMMED -19. CREATED -23. ADDED SH 1.10	LEM-3, LEM-4 LEM-5, LEM-6	✓		B. REYES 12-10-68		
	2	1.00						EOA2	IN MOD/BLK FOR -12, -14, -18, -19 REMOVED LTA-3(13) REQUIREMENTS	LTA-3		✓			
	3	1.00						LEO280-295	FOR -11, -12, -13, -14, -15, -17, -18, -19 & -23 ADDED LEM-7 THRU LM-15 EFF	LM-7 THRU LM-15	NOT	REQD			
	4	1.00, 2.00 3.00	4A 5A 6F 7A 8A			✓		EOA4 LCD1602	CREATED -25, -26, -27, -28, -29, -31, -32. REMOVED -12, -14, -18, -23. REMOVED EFFECTIVITY LM-3(33) THRU LM-15(45) FOR -11, -13, -15, -17, REVISED TRIM -19. NOTE. -11 -12, -13, -14 -15, -17, -18 MAY BE REWORKED INTO -25 -26, -27 -28 -29, -31, -32.	LM-3 THRU LM-15	NOTED	-23			
	5	300	5B				✓	EO A5	ON -29 IN FLD/DWG TRIMMED -29.		✓				
	6	1.00		LFM 50		✓		LEO280-834 LCD 2019 CCA 667 Ⓟ	FOR -25, -26, -27, -28, -29, -31 -32 ADDED PA-1(47) EFF.	PA-1(47)	NOT	REQD	H.D. E.C.G.		

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHT	RELIABILITY				
A										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10789	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10789-32	E	INTERCOSTAL	AL ALLOY SH	QQ-A-250/12	7075	.032 × 4 × 10	T6	88	
		-31		INTERCOSTAL				.032 × 4 × 10			
		-29		INTERCOSTAL				.032 × 4 × 10			
		-28		INTERCOSTAL				.032 × 4 × 10			
		-27		INTERCOSTAL				.032 × 4 × 10			
		-26		INTERCOSTAL				.032 × 4 × 10			
		-25		INTERCOSTAL				.032 × 4 × 10			
		-19		INTERCOSTAL				.032 × 3½ × 10¾			
		-17		INTERCOSTAL				.032 × 3⅝ × 10⅞			
		-15		INTERCOSTAL				.032 × 3⅜ × 10⅞			
		-13		INTERCOSTAL				.032 × 3½ × 10⅞			
		LDW280-10789-11	E	INTERCOSTAL	AL ALLOY SH	QQ-A-250/12	7075	.032 × 3⅝ × 10⅞	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	AL HEAT TREAT	MIL-H-6088
88	ANODIZE	LSP14-9030

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10789	A

SCALE NONE SHEET 2.00

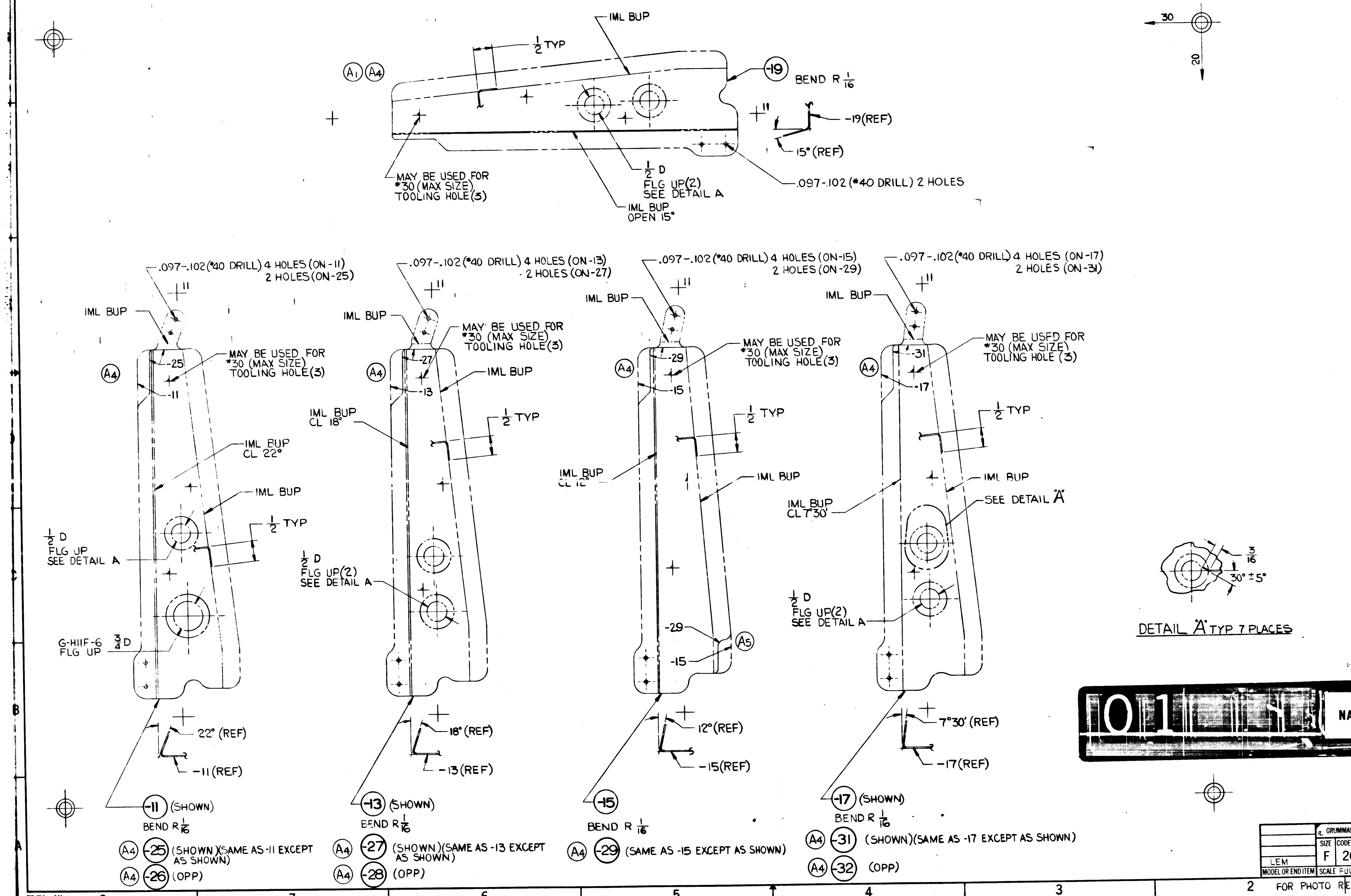
ENG 77.2 7-65

01

NAS 9-1100

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS EXCEPT AS NOTED.



IML BUP
1/2 TYP
(A1) (A4)
-19
BEND R 1/16
+11
-19(REF)
15° (REF)
MAY BE USED FOR #30 (MAX SIZE) TOOLING HOLE(3)
1/2 D
FLG UP(2)
SEE DETAIL A
IML BUP
OPEN 15°
.097-.102 (#40 DRILL) 2 HOLES
-30
20
.097-.102 (#40 DRILL) 4 HOLES (ON-11)
2 HOLES (ON-25)
+11
IML BUP
(A4)
-25
-11
MAY BE USED FOR #30 (MAX SIZE) TOOLING HOLE(3)
IML BUP CL 22°
IML BUP
1/2 TYP
1/2 D
FLG UP
SEE DETAIL A
G-H11F-6 3/4 D
FLG UP
22° (REF)
-11 (REF)
-11 (SHOWN)
BEND R 1/16
(A4) -25 (SHOWN)(SAME AS -11 EXCEPT AS SHOWN)
(A4) -26 (OPP)
.097-.102 (#40 DRILL) 4 HOLES (ON-13)
2 HOLES (ON-27)
+11
IML BUP
MAY BE USED FOR #30 (MAX SIZE) TOOLING HOLE(3)
(A4)
-27
-13
IML BUP
IML BUP CL 18°
1/2 TYP
1/2 D
FLG UP(2)
SEE DETAIL A
18° (REF)
-13 (REF)
-13 (SHOWN)
BEND R 1/16
(A4) -27 (SHOWN)(SAME AS -13 EXCEPT AS SHOWN)
(A4) -28 (OPP)
.097-.102 (#40 DRILL) 4 HOLES (ON-15)
2 HOLES (ON-29)
+11
IML BUP
MAY BE USED FOR #30 (MAX SIZE) TOOLING HOLE(3)
(A4)
-29
-15
1/2 TYP
IML BUP CL 12°
IML BUP
-29
-15
(A5)
12° (REF)
-15 (REF)
-15
BEND R 1/16
(A4) -29 (SAME AS -15 EXCEPT AS SHOWN)
.097-.102 (#40 DRILL) 4 HOLES (ON-17)
2 HOLES (ON-31)
+11
IML BUP
MAY BE USED FOR #30 (MAX SIZE) TOOLING HOLE (3)
(A4)
-31
-17
1/2 TYP
IML BUP
IML BUP CL 7°30'
SEE DETAIL "A"
1/2 D
FLG UP(2)
SEE DETAIL A
7°30' (REF)
-17 (REF)
-17 (SHOWN)
BEND R 1/16
(A4) -31 (SHOWN)(SAME AS -17 EXCEPT AS SHOWN)
(A4) -32 (OPP)
3/16
30° ± 5°

DETAIL "A" TYP 7 PLACES

NAS 9-1100

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
LEM	SIZE F	CODE IDENT NO. 26512	LDW280-10789	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

LEM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 50	LTM280-26963	PA-1(47)	1 EA
LM	LDW280-23215	LM-15(45)	1 EA
		THRU	
LM	LDW280-23215	LM-3(33)	1 EA

LDW 280-10790-12-18-19

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23215	LTA-3(13)	1 EA

PART NO. LDW 280-10790-13

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23215	LEM-15(45)	1 EA
		THRU	
LEM	LDW280-23215	LEM-8(38)	1 EA

PART NO. LDW280-10790-25&-26

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM50	LTM280-26963	PA-1(47)	1 EA
LEM	LDW280-23215	LEM-7(37)	1 EA
		THRU	
LEM	LDW280-23215	LEM-3(33)	1 EA

PART NO. LDW280-10790-21&-22

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM50	LTM280-26963	PA-1(47)	1 EA
LEM	LDW280-23215	LEM-15(45)	1 EA
		THRU	
LEM	LDW280-23215	LEM-7(37)	1 EA
LEM	LDW280-23215	LEM-6(36)	1 EA
LEM	LDW280-23215	LEM-5(35)	1 EA
LEM	LDW280-23215	LEM-4(34)	1 EA
LEM	LDW280-23215	LEM-3(33)	1 EA
LEM	LDW280-23215	LTA-3(13)	1 EA

PART NO. LDW280-10790-11,-15&-17

GAEC SCH NO. 31-2

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV	B	B	B	B						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED

LAST DASH NO. USED -26

GRUMMAN REL INFO (A)

PRIM NO. 215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

-.032 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY	P. SCHELL 14 FEB 66	RELIABILITY	
LAYOUT BY	P. DI JENNARO		
CHECKED BY	EG 3-9-66		
GR. LEADER	J. PISATERI 3/2/66		
VEH. DES. INT.			
STRUCTURES	FEB 3/18	PROJ ENGR	3-22-66
STRUCTURES	3-18	REL & GROUP	3-21
WEIGHTS	3-21		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP
ASCENT STAGE ~ CABIN ~ REACTION CONTROL SYSTEMS ~ SUPPORTS

SIZE	CODE IDENT NO.		
B	26512	LDW280-10790	B

SCALE NONE

SHEET 1.00 OF 4

37.1 9-64

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00, 1.10 3.00						E.O.A1	SH. 1 OF 4 WAS 1 OF 3 ADDED SH. 1.10. REMOVED (1) HOLE FROM -19.	LTA-3, LEM-3 THRU LEM-6	✓	S.J.	BRODA 8-11-66		
B	1	1.00						LE0280-295	FOR LDW280-10790-11, -12, -15, -17, -18 & -19 ADDED LEM-7(37) THRU LEM-15(45) EFF	LEM-7 THRU LEM-15	NOT	REQ'D	J. BISCALDI 10-18-68	BC 10-19-68	
	2	1.00, 2.00 3.00				✓		EOB2 LCD 1602	CREATED -21 & -22. RESTRICTED -13 & -14 TO LTA-3(13) (WAS LTA-3(13) & LEM-3(33) THRU LEM-15(45).)	LEM-3 THRU LEM-15		✓			
	3						✓	EOB3	CANCELLED BY EOB4.	LM-3 THRU LM-6					
	4						✓	EOB4	CANCEL EOB3 & -23 CREATED THERON						
	5						✓	EOB5	IN FLD, B/M & M/B CREATED -25 & -26 REMOVED LM-8 THRU LM-15 FROM -21 & -22.	LM-3 THRU LM-15					
	6			LFM50		✓		LE0280-834 LCD 2019 CCA 667	FOR LDW280-10790-11, -12, -15, -17, -18, -19, -21 & -22 ADDED PA-1(47) EFF.	PA-1	NOT	REQ'D			
	7				✓			LED280-1117	FOR -12 - 14 - 18 & -19 REMOVED LTA-3 REQUIREMENTS (REF LDW280-23215EOA4)	LTA-3		✓			

CHG APPROVED	LTR	GROUP LDR	VEH. DES. INT.	STRUCTURES	STRUCTURES	WEIGHTS
	A					
	B					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10790	B
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10790-26	E	CLIP	AL ALLOY SH	QQ-A-250/12	7075	.040 x 1 5/8 x 3 1/4	T6	88	
		-25						.040x 1 5/8 x 3 1/4			
		-22						.040 x 1 5/8 x 3 1/4			
		-21						040x 1 5/8 x 3 1/4			
		-19						.040 x 1 5/8 x 3 3/8			
		-18						.040 x 1 5/8 x 3 1/2			
		-17						.040 x 1 5/8 x 3 1/2			
		-15						.040 x 1 5/8 x 3 1/2			
		-14						.040 x 1 5/8 x 3 1/4			
		-13						.040 x 1 5/8 x 3 1/4			
		-12						.040 x 1 5/8 x 3 1/4			
		LDW280-10790-11	E	CLIP	AL ALLOY SH	QQ-A-250/12	7075	.040 x 1 5/8 x 3 1/4	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	AL HEAT TREAT	MIL-H-6088
88	ANODIZE	LSP 14-9030

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

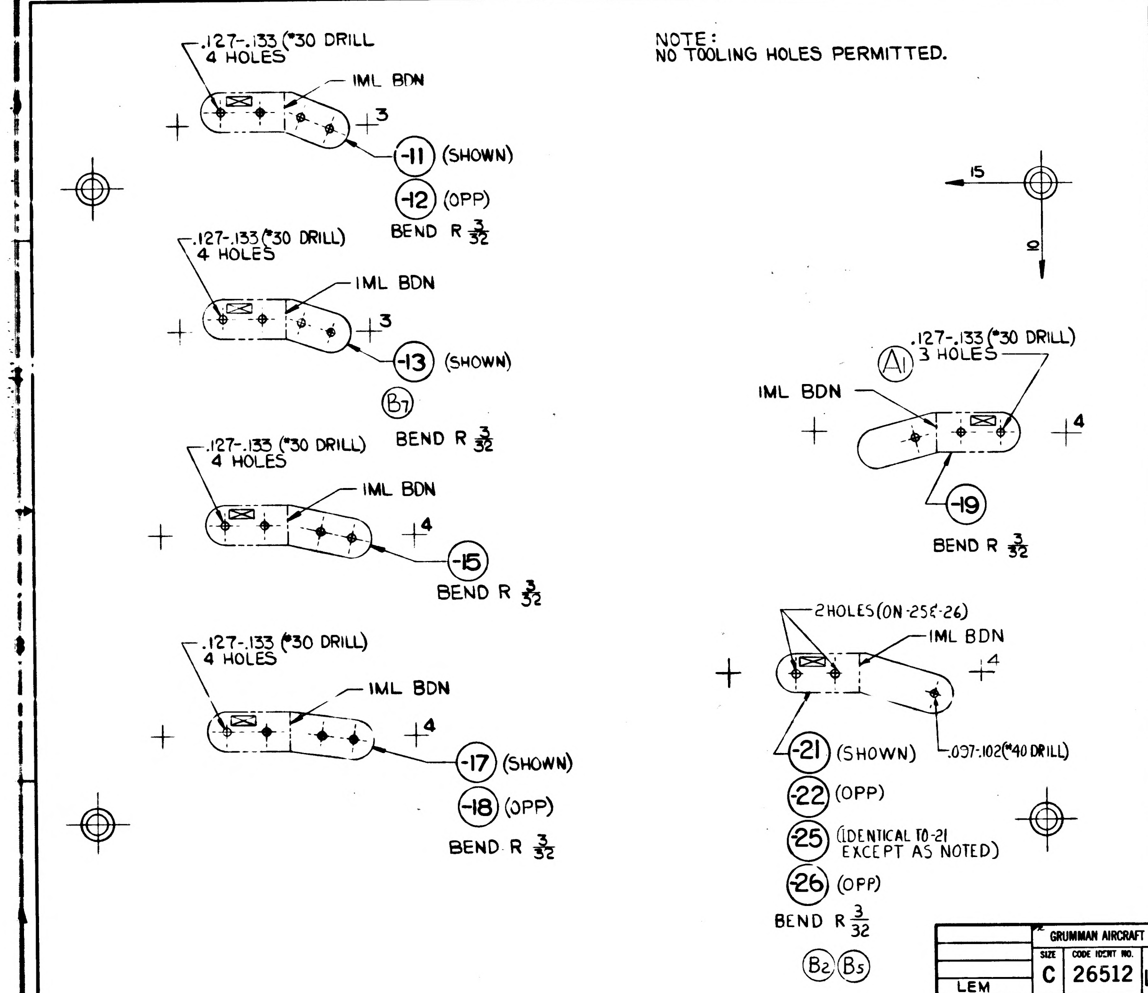
SIZE	CODE IDENT NO.		
B	26512	LDW280-10790	B

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


4
3
2
1
.127-.133 (#30 DRILL) 4 HOLES
IML BDN
3
-11 (SHOWN)
-12 (OPP)
BEND R 3/32
.127-.133 (#30 DRILL) 4 HOLES
IML BDN
3
-13 (SHOWN)
B7
BEND R 3/32
.127-.133 (#30 DRILL) 4 HOLES
IML BDN
4
-15
BEND R 3/32
.127-.133 (#30 DRILL) 4 HOLES
IML BDN
4
-17 (SHOWN)
-18 (OPP)
BEND R 3/32
15
10
.127-.133 (#30 DRILL) 3 HOLES
A1
IML BDN
4
-19
BEND R 3/32
2 HOLES (ON -25 & -26)
IML BDN
4
-21 (SHOWN)
.097-.102 (#40 DRILL)
-22 (OPP)
-25 (IDENTICAL TO -21 EXCEPT AS NOTED)
-26 (OPP)
BEND R 3/32
B2 B5

NOTE:
NO TOOLING HOLES PERMITTED.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE C	CODE IDENT NO. 26512	LDW280-10790	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

01

NAS 9-1100

LDW280-10796 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28075	LTA-8(18)	1EA
PART NO. LDW280-10796-15 & -16		GAEC SCH NO. 31-3	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54051	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
	LDW280-54051	LM-4(34)	1
	LDW280-53051	LM-3(33)	1
LM	LDW280-23051	LTA-3(13)	1
PART NO. LDW280-10796-13		GAEC SCH NO. 31-3	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54051	LM-15(45)	3
		LM-14(44)	3
		LM-13(43)	3
		LM-12(42)	3
		LM-11(41)	3
		LM-10(40)	3
		LM-9(39)	3
		LM-8(38)	3
		LM-7(37)	3
		LM-6(36)	3
		LM-5(35)	3
	LDW280-54051	LM-4(34)	3
	LDW280-53051	LM-3(33)	3
LM	LDW280-23051	LTA-3(13)	3
PART NO. LDW280-10796-11		GAEC SCH NO. 31-3	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -16

GRUMMAN REL INFO A

PRIM NO. 215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.010 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM NO. 1
DOCUMENTATION TYPE II

DRAWN BY	S. BRASWELL 3-24-66	RELIABILITY	
LAYOUT BY	B. FINGER 3-24		
CHECKED BY			
GR. LEADER	J. PUSATERI 3-28		
VEH. DES. INT.	W. BISCHOFF 3-28		
STRUCTURES	FEB BW 3-29	PROJ ENGR	J. ALBER 3-30
STRUCTURES	HILDERMAN 3-29	REL GROUP	BOTTI 3-31-66
WEIGHTS	D. ROBESCH 3-30		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP
ASCENT STAGE-CABIN-SUPPORT BRACKET

SIZE B | CODE IDENT NO. 26512 | LDW280-10796 | A
SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-10796 NO CHG 3-31-66

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE LAST REVISION NO CHANGE LOFTED DRAWING WAS DIMENSIONED DRAWING ADDED SH 1.10, 2.00 & 3.00.				J. ZALETEL 11-10-66 MILLEN	RMc 11-15-66	
A	1	1.00,1.10 2.00&3.00						LE0280-295 ②	FOR-11&-13 ADDED LM-7 THRU LM-15 EFF. D.J. GB	LM-7 THRU LM-15	NOT	REQ'D			

CHG APPROVED

LTR	GROUP LDR	VEH.DES.INT.	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY				
A										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10796	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10796-16	E	CLIP	AL ALY SH	QQ-A-250/4	2024-T3	.032 x 3 x 5	NONE	88	
		LDW280-10796-15	E	CLIP	AL ALY SH	QQ-A-250/4	2024-T3	.032 x 3 x 5	NONE	88	
		LDW280-10796-13	E	CLIP	AL ALY SH	QQ-A-250/4	2024	.063 x 3 x 3	T3/T42	88	
		LDW280-10796-11	E	CLIP	AL ALY SH	QQ-A-250/4	2024	.063 x 2 x 3	T3/T42	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T42	HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10796	A

SCALE NONE

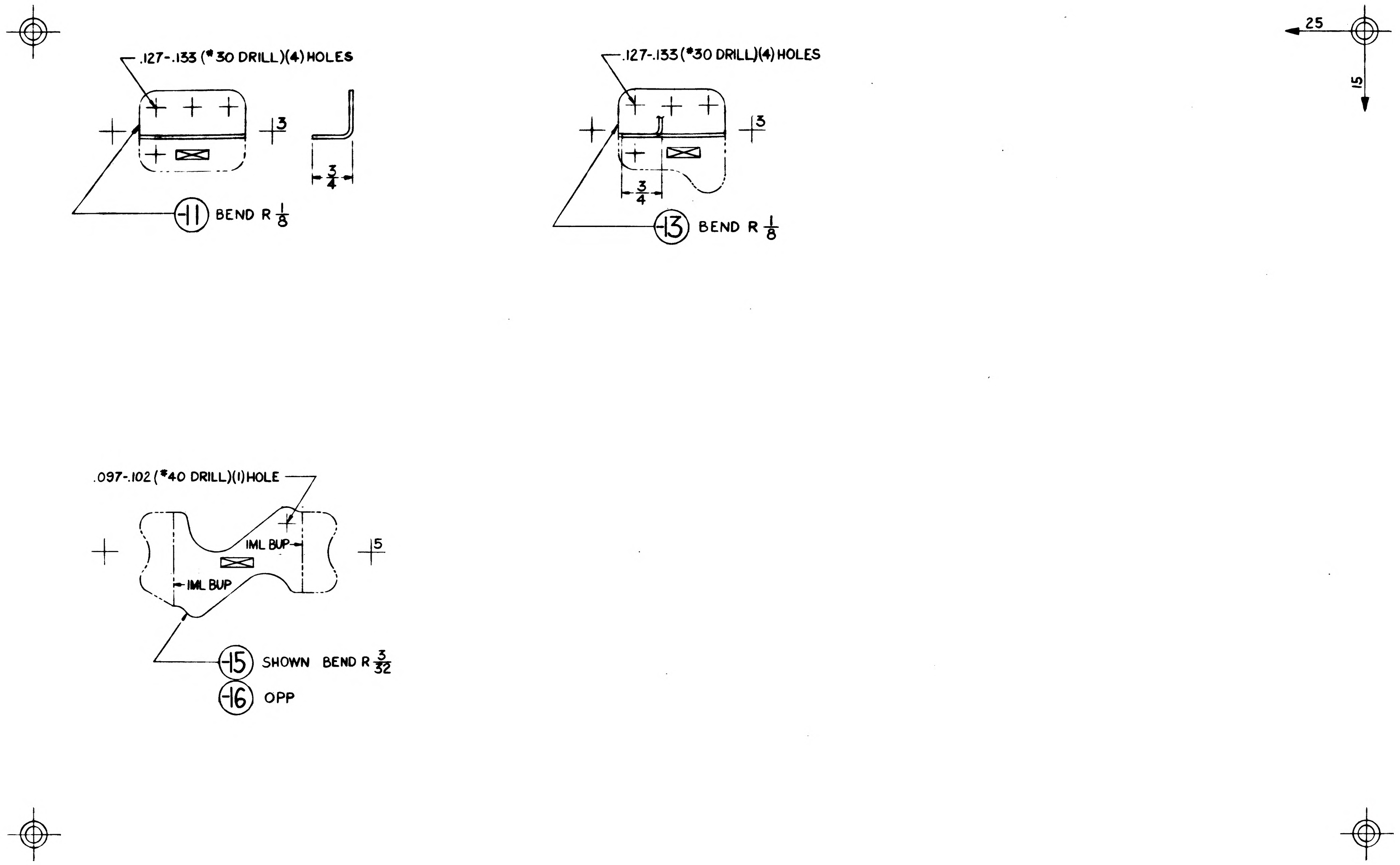
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

LDW280-10796 A


.127-.133 (#30 DRILL)(4) HOLES
3
3/4
-11 BEND R 1/8
.127-.133 (#30 DRILL)(4) HOLES
3
3/4
-13 BEND R 1/8
25
15
.097-.102 (#40 DRILL)(1) HOLE
IML BUP
IML BUP
5
-15 SHOWN BEND R 3/32
-16 OPP

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-10796 A

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

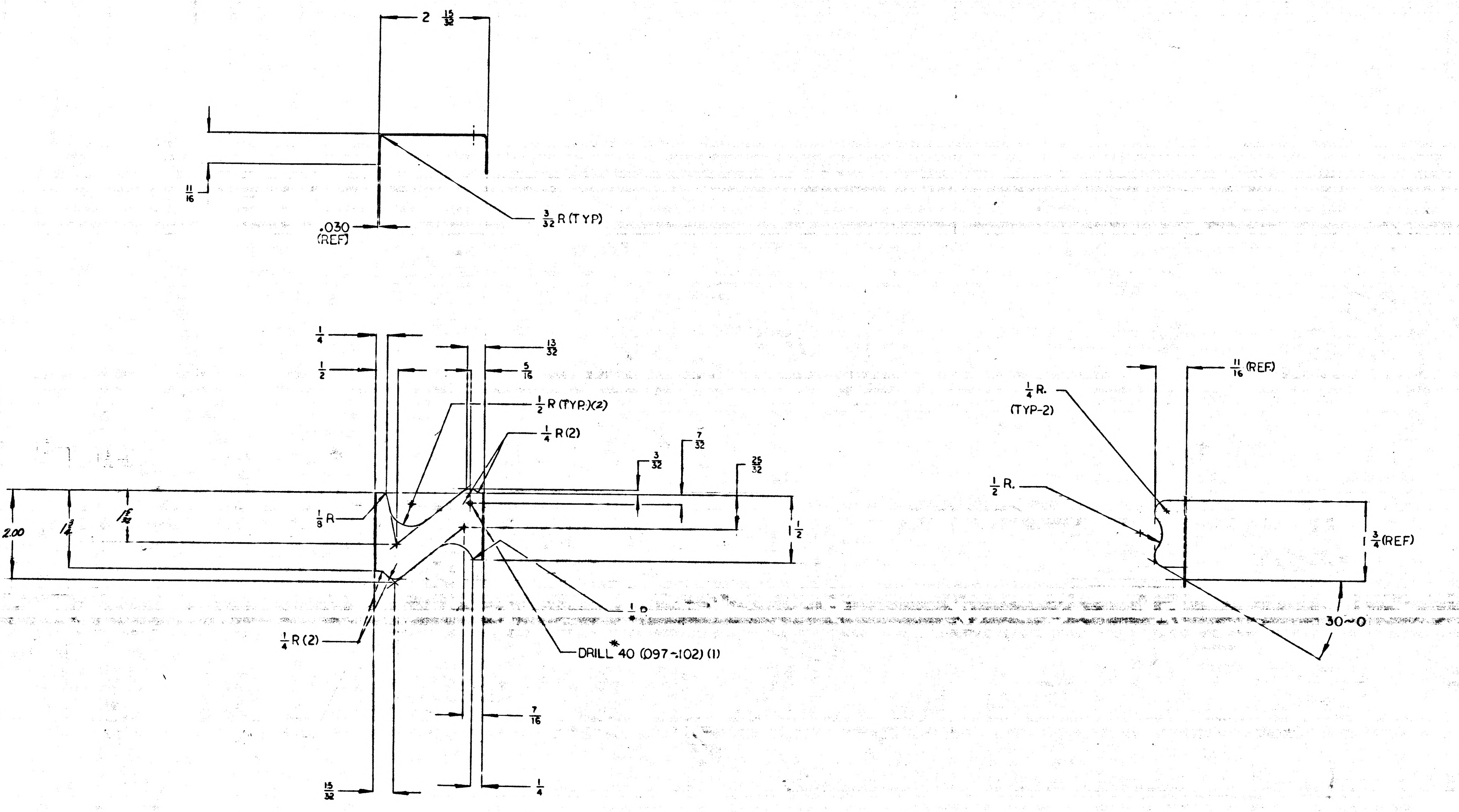
LM MODEL OR END ITEM	SIZE D	CODE IDENT NO. 26512	LDW280-10796	R A
	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

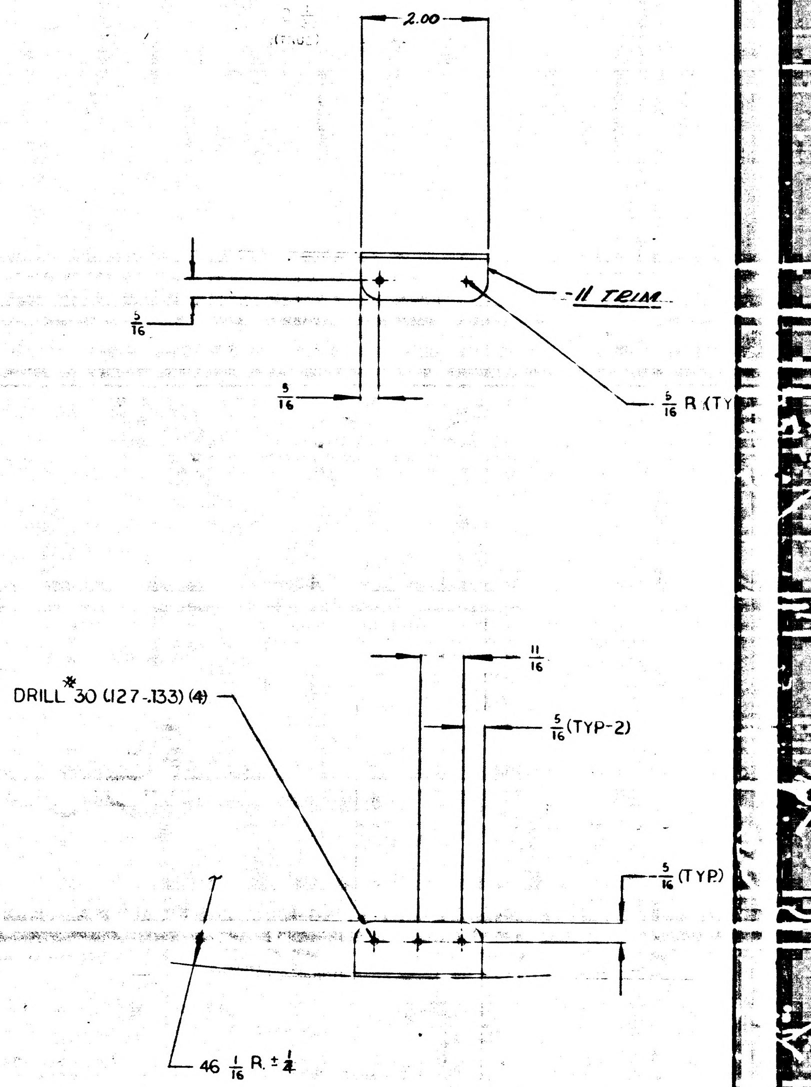
K2

01

NAS 9-1100


2 15/32
11/16
.030 (REF)
3/32 R (TYP)
1/4
1/2
13/32
5/16
1/2 R (TYP.)(2)
1/4 R (2)
7/32
3/32
25/32
2.00
1 3/4
1 5/32
1/8 R
1 1/2
1/4 R (2)
1/2 R
DRILL * 40 (.097-.102) (1)
7/16
15/32
1/4
11/16 (REF)
1/4 R. (TYP-2)
1/2 R.
3/4 (REF)
30~0

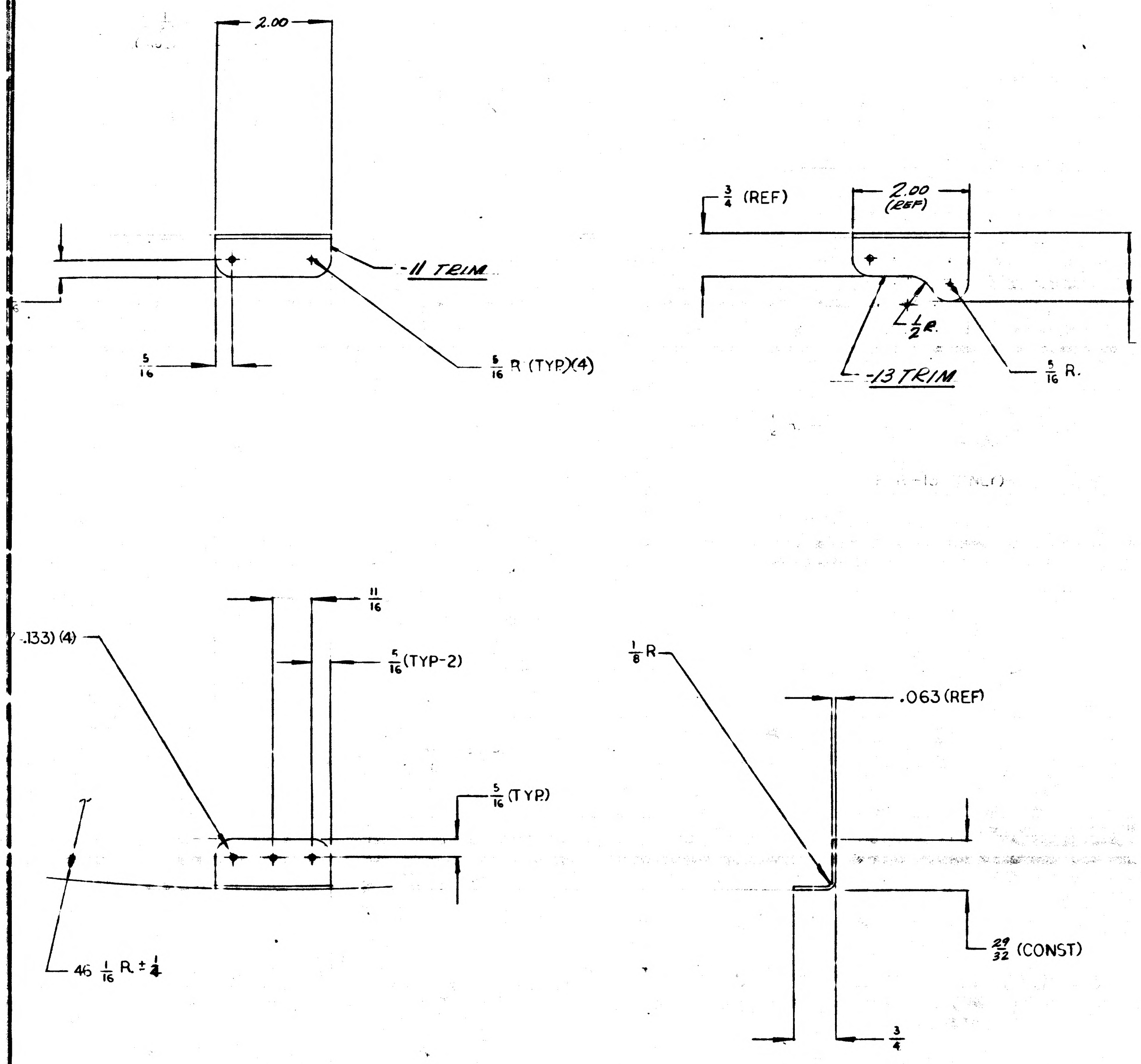
LDW280-10796-15 (SHN)
-16 (OPP)


2.00
-11 TRIM
5/16
5/16
5/16 R (TY
11/16
DRILL * 30 (.127-.133) (4)
5/16 (TYP-2)
5/16 (TYP)
46 1/16 R. ± 1/4

LDW280-10796-11 (SHN)
-13 (SAME EXC

01 X 02

NAS 9-1100



LDW280-10796-11 (SHN)
-13 (SAME EXCEPT AS SHN)

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
70	ALODINE	G. S. S.	
88	ANODIZE	~~G. S. S.~~	LSP-14-9030

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
T3/T42	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

RECORD E. O.'s

MODEL	E O NUMBER	MODULE NO.

MANUFACTURING OPERATIONS

NOTES CHECKED ✓ APPLY TO THIS DWG.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.	
250 FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
RUBBER STAMP PART NUMBER ~~AND ALL OTHER MARKINGS~~ ~~IN REGION MARKED~~ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE	
SYMBOL ∮ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓

REVISIONS

REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY / BCRF OR ECP	CLASS II	CLASS I	DET SPEC RQM	ENGRG ORDER	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MODULE NUMBER	DISPOSITION OF EXIST PARTS: RE-WORK	SCRAP	ENGRG APPD	GOVT APPD

DWG. SIZE 34 X

PRINTING INFO ONLY

FULL SIZE SHEET AREA (36 X) SQ. FT.

½ SIZE SHEET AREA (½ OF FULL) SQ. FT.

PRINT TRIM LINE

LDW280-10796

02/02

NAS 9-1100

QTY REQ'D PER ASSY			PART OR IDENTIFYING NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE
			LDW280-10769-16	E		CLIP	AL-ALLOY	QQ-A-355	2024-T3	.032 x 3 x 5	T3/T42	88		
			-15			CLIP			2024-T3	.032 x 3 x 5	T3/T42			
			-13			CLIP			2024	.063 x 2 1/4 x 2 1/2	T3/T42			
			LDW280-10796-11	E		CLIP	AL-ALLOY	QQ-A-355	2024	.063 x 2 1/4 x 2 1/2	T3/T42	88		

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
LEM	LDW280-28075	LTA-8(18)	1-EA

PART NO. LDW280-10796-15, -16

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
LEM	LDW280-54051	LEM-6 (36)	1
LEM	LDW280-54051	LEM-5 (35)	1
LEM	LDW280-54051	LEM-4 (34)	1
LEM	LDW280-53051	LEM-3 (33)	1
LEM	LDW280-23051	LTA-3 (13)	1

PART NO. LDW280-10796-13 GRUMMAN SCH INFO

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
LEM	LDW280-54051	LEM-6 (36)	3
LEM	LDW280-54051	LEM-5 (35)	3
LEM	LDW280-54051	LEM-4 (34)	3
LEM	LDW280-53051	LEM-3 (33)	3
LEM	LDW280-23051	LTA-3 (13)	3

PART NO. LDW280-10796-11 GRUMMAN SCH INFO 31-3

PARTS TO BE REDRAWN ON PRODUCTION FORMAT

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
± 1/32 ± .010 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

GRUMMAN REL INFO

PRIM. NO. K(001) 215 MP-1-1

DRAWN BY	S. BRASWELL	3/…
CHECKED BY		
LAYOUT BY	B FINGER	3/26
GRP LEADER	J. Pinata	3/28
VDI		3/28
STRUCT		3/31
STRUCT		3/29
WEIGHTS		3-30
RELEASE		4-1-66
PROJ ENG		3-30

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

CLIP
ASCENT STAGE - CABIN - SUPPORT BRACKET

CONTRACT NO. NAS-9-1100 DOCUMENTATION TYPE II

CODE IDENT NO.	SIZE	
26512	J	LDW280-10796

SCALE FULL LINE ITEM I SHEET 1

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW280-10796
EO NO. B1
CONTROL INFO NO. LDW 280 B1704

IN M/B FOR -11 NUMBER REQ'D PER MOD 5 WAS 3
FOR LM 4(34) THRU LM15(45)

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD# 2507

REASON FOR EO: STRUCTURAL PROVISION FOR OPERATIONAL STOWAGE LIST

DESCRIPTION OF EO: IN M/B FOR-11 NUMBER REQ'D/MOD 5 WAS 3 FOR LM4(34) THRU LM15(45)

GAEC EO RELEASE: X 2/3

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM 4(34) THRU	LM15(45)

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
*		NOT	REQ'D
REVISE DWG	RECORD EO	REWORK	SCRAP

APPROVED BY				FNR				
DATE	1/25/68			1-25-68	1-26		1/25/68	2-3-68
G	VD1	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	CLIP A/S-CABIN - SUPPORT BRAKET	LDW280-10796	B1

1-29-68
ISSUED BY P WEISSLITZ x7033 SECTION VD1 GROUP NO. 335 PL 25

01 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10796
EO NO. B2
CONTROL INFO NO. LDW280-B-5076

IN M/B FOR -11 NUMBER REQ'D/MOD IS 4 WAS 5
N/A LDW 280-54051
EFF. LM-6(36) THRU LM-15(45)

ADD -14 OPPOSITE TO -13 (MAT'L. SAME AS -13)
1 REQ'D/MOD
N/A LDW 280-54051
EFF. LM-6(36) THRU LM-15(45)

SWIP

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD 2909 PKG. #2 (5)

REASON FOR EO: CLIPS REQUIRED FOR REDESIGN OF R.H. SIDE CONSOLE

DESCRIPTION OF EO: IN M/B FOR -11 NUMBER REQ'D/MOD 4 WAS 5 ADDED -14

GAEC EO RELEASE: 8/20

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-6(36)	
		THRU	
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK SCRAP -11

APPROVED BY							
DATE	8/1/68			8/13/68	8/16/8		8/16/68
	V.D.I	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY: C
DRAWING TITLE: CLIP A/S-CABIN-SUPPORT BRACKET
DRAWING NO.: LDW280-10796
EO NO.: B2

08-30-68
ISSUED BY A. PROKOPETZ/F. DERESPINIS SECTION V.D.I. X7033 GROUP NO. 335 PL 25

01 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW 280-10796
EO NO. B3
CONTROL INFO NO. LDW 280 B-9362

RESTRICT -13 TO LTA-3(13), LM-3(33) THRU LM-9(39) AND LM-15(45) EFFECTIVITY
(EFF WAS LTA-3(13) & LM-3(33) THRU LM-15(45).)

RESTRICT -14 TO LM-6(36) THRU LM-9(39) AND LM-15(45) EFFECTIVITY
(EFF WAS LM-6(36) THRU LM-15(45).)

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD # 3994 PKG # 23 (5)

REASON FOR EO: R.H. SIDE KICK PLATE REDESIGN FOR LMMP

DESCRIPTION OF EO: RESTRICTED -13 TO LTA-3(13), LM-3(33) THRU LM-9(39) & LM-15(45), AND RESTRICTED -14 TO LM-6(36) THRU LM-9(39) AND LM-15(45) BY REMOVING -13 AND -14 FROM LM-10(40) THRU LM-14(44)

GAEC EO RELEASE: 11/19/69

MODEL	EFFECTIVITY M		
	~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	~~SUB CONTR UNIT NO.~~
LM	LM-10 (40) THRU LM-14(44)		

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY							
REVISE DWG	RECORD EO	REWORK	SCRAP	DATE	11/14/69			11/14/69	11/17/69		11/14/69	11/18/69
✓			✓		VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~ Bauman

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	CLIP-A/S, CABIN, SUPPORT BRACKET	LDW 280-10796	B3

CSR 12 05 69

ISSUED BY Geo. W. Rockleın x 86048 11/13/69 SECTION VEH. DES. INT. GROUP NO. 335 PL 25

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM	LDW280-53079	LEM-11(41)	1
										LEM-10(40)	1
										LEM-9(39)	1
										LEM-8(38)	1
										LEM-7(37)	1
										LEM-6(36)	1
										LEM-5(35)	1
										LEM-4(34)	1
									LDW280-53079	LEM-3(33)	1
								LEM	LDW280-23079	LTA-3(13)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW280-10797-11		GAEC SCH NO. 32-6	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	3.00					
REV	A	A							
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A	
LAST DASH NO. USED	-11	PRIM NO.	LE(001)
		215	PP12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	SUPPA-1-21-66		
LAYOUT BY	GRANDY		
CHECKED BY	M 1-29-66		
GR LEADER	W. Phillips 2/8/66		
VEH DES INT	[illegible] 2/9/66		
STRUCTURES	[illegible] BW 2-9	PROJ ENGR	[illegible] 1/17
STRUCTURES	Hilderman 2-10	REL GROUP	Lippincott 2/19
WEIGHTS	A Kolhead 2-10		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

WEB
ASCENT STAGE-MID SECT-ENGINE
SUPPT BEAM (+Y10.5)

SIZE	CODE IDENT NO.		
B	26512	LDW280-10797	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 9-64

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00 & 1.10						E.O. A1	ON SH#1 REVISED N/A -11 FOR LEM-3, LEM-4, LEM-5 & LEM-6 (WAS LDW280-23079). ADDED ON -11 LEM-7, LEM-8, LEM-9, LEM-10 & LEM-11. N/A LDW280-53079.1 REQD/MODULE. ADDED SH 1.10 SH 1.00 OF 4 WAS 1.00 OF 3.	LEM-3 THRU LEM-11	NOT	REQD	R. NISBET 7-9-66	☒	☒

CHG APPROVED

LTR	GROUP LDR	VEH DES. INT.	STRUCTURES	STRUCTURES	WEIGHTS
A					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10797	A

SCALE NONE SHEET 1.10

ENG 77.16 3-65

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10797-11	E	WEB	AL ALLOY SH	QQ-A-250/12	7075-T6	.040x10 5/8x26 3/4	CM	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						CM	CHEM-MILLING	LSP14-26100
						88	ANODIZE	LSP14-9030

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

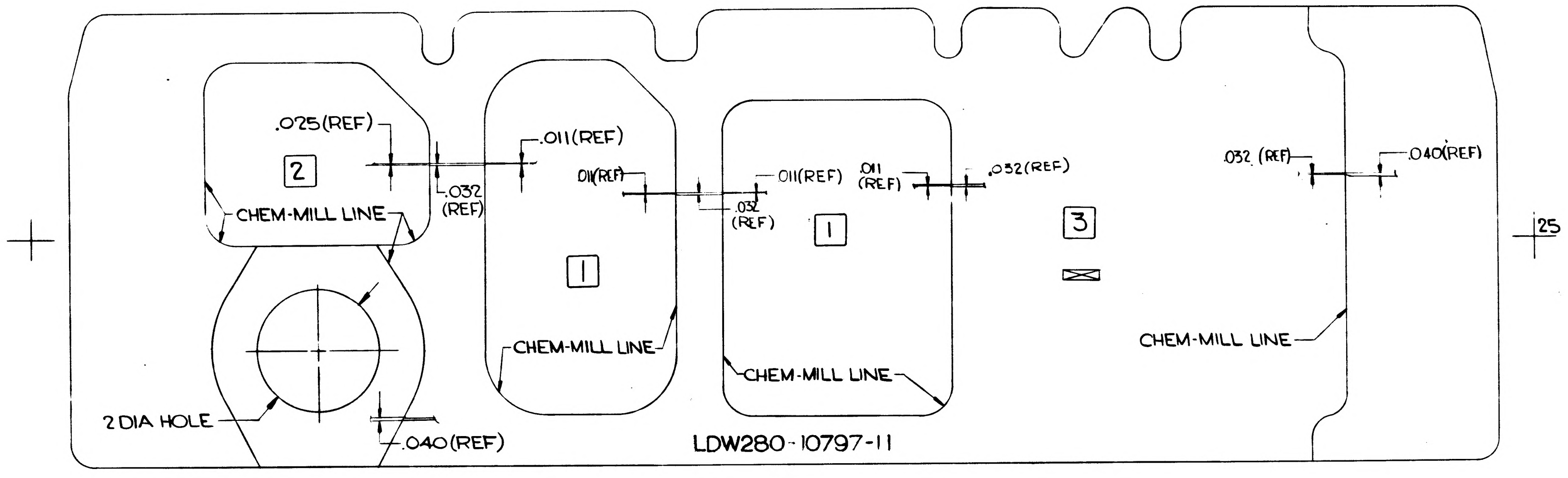
SIZE B
CODE IDENT NO. 26512
LDW280-10797
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES
1- NO TOOLING HOLES PERMITTED IN PART
2-UPON INITIAL RELEASE OF THIS DWG TOOLING FOR LDW280-10797-11 IS SIMILAR TO LDW280-10447-13



LDW280-10797-11

CHEM-MILL LINE TOLERANCE
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	.011 ± .002	.029(REF)
2	.025 ± .002	.015(REF)
3	.032 ± .002	.008(REF)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-10797

⑥

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LEM	D	26512	LDW280-10797
	SCALE FULL		SHEET 300

K2

2 FOR PHOTO REPRODUCTION 1

C

ENG 32.1 REV 3-65

E.R.

*

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 649
CONTROL INFO NO. LDW280-A-7937

REMOVE LM-3(33) THRU LM-15(45) EFF. & N/A LDW280-53079
FOR DASH NOs * ON DWGS LISTED BELOW

DWG. NO.	DASH NO *	CHG. NO.	TITLE
✓ LDW280-10447	-13	C1	SEE DWG.
✓ 10520	-11 & -12	D3	
✓ 10797	-11	B2	
10587	-13 & -15	E2	
10458	-15	E1	
10435	-13, -14, -15, -17 & -18	C4	
LDW280-11513	-15 & -17	A5	SEE DWG.

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 1422

E

REASON FOR EO
PARTS NOT REQ'D DUE TO ENGINE ROTATION

DESCRIPTION OF EO
REMOVED LM-3(33) THRU LM-15(45) EFF FOR DASH NO *

Ⓡ GAEC EO RELEASE C
JL 7-13

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3(33) THRU LM-15(45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG	RECORD EO	REWORK	SCRAP
✓			✓ *

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY	[illegible]			F.N.R.	[illegible]		[illegible]	[illegible]
DATE	7/?/67			7/7/67	7-11		7/12/67	7/12/67
	VDI							

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DWG.	LEO 280	649

ISSUED BY A. PROKOPETZ X7036 SECTION V.D.I GROUP NO. 335 PL 25

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD MO E
				LEM	LDW280-23268	LEM-6(36)	1 EA				
						LEM-5(35)	1 EA				
						LEM-4(34)	1 EA				
						LEM-3(33)	1 EA				
						LEM-2(32)	1 EA				
						LEM-1(31)	1 EA				
						LTA-8 (18)	1 EA	LEM	LDW280-23268	PA-1	1 EA
				LEM	LDW280-23268	LTA-3(13)	1 EA	LEM	LDW280-23268	LTA-1(11)	1 EA
PART NO.		GAEC SCH NO.		PART NO. LDW280-10798-1,-19,-21,-23,-25,-27		GAEC SCH NO.		PART NO. LDW280-10798-11,-13 &-15		GAEC SCH NO. 32-2	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00	4.00				
REV	A	A	A	A	A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL^c INFO A	
LAST DASH NO. USED	-27	PRIM NO. 215	LE(001) MP12

ENG 77.1 9-64

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100		LINE ITEM	DOCUMENTATION TYPE II
DRAWN BY	V.NARONIS 2-14-66	RELIABILITY	
LAYOUT BY	J.KORYKORA 2/21/66		
CHECKED BY	2·16·64		
GR.LEADER	2/21/66		
VEH.DES.INT.	2/21		
STRUCTURES	3/18	PROJ ENGR	3-25-66
STRUCTURES	Wilderman 3-18	REL GROUP	Bott. 3-26-66
WEIGHTS	D Rabe 3-24		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE-MID-SECT.-Z 27.0 BULKHEAD
PROPULSION PRESSURE TRANSDUCERS

SIZE	CODE IDENT NO.		
B	26512	LDW280-10798	A
SCALE	NONE	SHEET 1.00 OF 5	

01

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1,1.10,2.00, 3.00 & 4.00					✓	EO A1	RESTRICTED -11,-13 & -15 TO LTA-1 & PA-1. EFFECTIVITY FOR -11,-13 & -15 WAS PA-1, LTA-1, LTA-8, LEM-1, LEM-2, LEM-3, LEM-4, LEM-5, LEM-6 & LTA-3. ADDED -1,-17,-19,-21,-23 & -25. SH 1 OF 5 WAS SH 1 OF 3, ADDED SH 1.10 & SH 4.00.	LTA-1,-3,-8, LEM-1 THRU-6, PA-1		-11,-13 & -15	A. BEERS 6-13-66		
	2	1.10,2.00, 4.00						EO A2	IN FLD (ON -17) ADDED DIMENSIONS $2\frac{1}{2}$, $3\frac{1}{4}$, $\frac{21}{32}$ & $\frac{23}{32}$; DRILL #40 (2). IN FLD & B/M (ON-1) NAS1097AD3 (12) WAS MS20426AD3 (12).	LTA-3, -8, LEM-1 THRU-6	✓				
	3	1,1.10, 2.00 & 4.00	8B 5C					EO A3	IN FLD, B/M & M/B, ADDED -27, (1) REQD ON LTA-3(18), LEM-1(31) THRU LEM-6(36), N/A LDW280-23268. IN FLD, FOR-17, REMOVED FLANGE & RELATED DIMENSIONS, EXCEPT ON LTA-8(18), LEM-1(31) & LEM-2(32)						

FOR CONTINUATION OF REVISIONS SEE SHEET ________

ENG 77.3 5-66

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10798	A
SCALE NONE			SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
2		NAS684A08	E	NUT, PLATE	STD PART						
4		NAS680A08	E	NUT, PLATE	STD PART						
		NAS1097AD3	E	RIVET	STD PART						
		LDW280-10798-27	E	ANGLE	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 x 2½ x 2¾	NONE	88	
		LDW280-10798-25	E	BLOCK	AL ALLOY SH	QQ-A-250/4	2024-T3	.080 x 1½ x 2⅜	NONE	76	
		-23		BLOCK				.080 x 1⅜ x 2⅜		76	
		-21		CLIP				.032 x 2 x 3⅛		88	
		-19		WEB				.032 x 4¾ x 8½		88	
1		-17		BRACKET		QQ-A-250/4	2024-T3	.032 x 7 x 14	NONE	88	
		-15		CLIP		QQ-A-250/12	7075	.032 x 2⅛ x 3¼	T6	88	
		-13		WEB		QQ-A-250/12	7075	.032 x 5⅛ x 7¾	T6	88	
		LDW280-10798-11	E	BRACKET	AL ALLOY SH	QQ-A-250/12	7075	.032 x 4⅞ x 13⅜	T6	88	
		LDW280-10798-1	E	BRACKET ASSY					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	AL HEAT TREAT	MIL-H-6088
88	ANODIZE	LSP14-9030
76	ALODINE	LSP14-9010

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10798	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65

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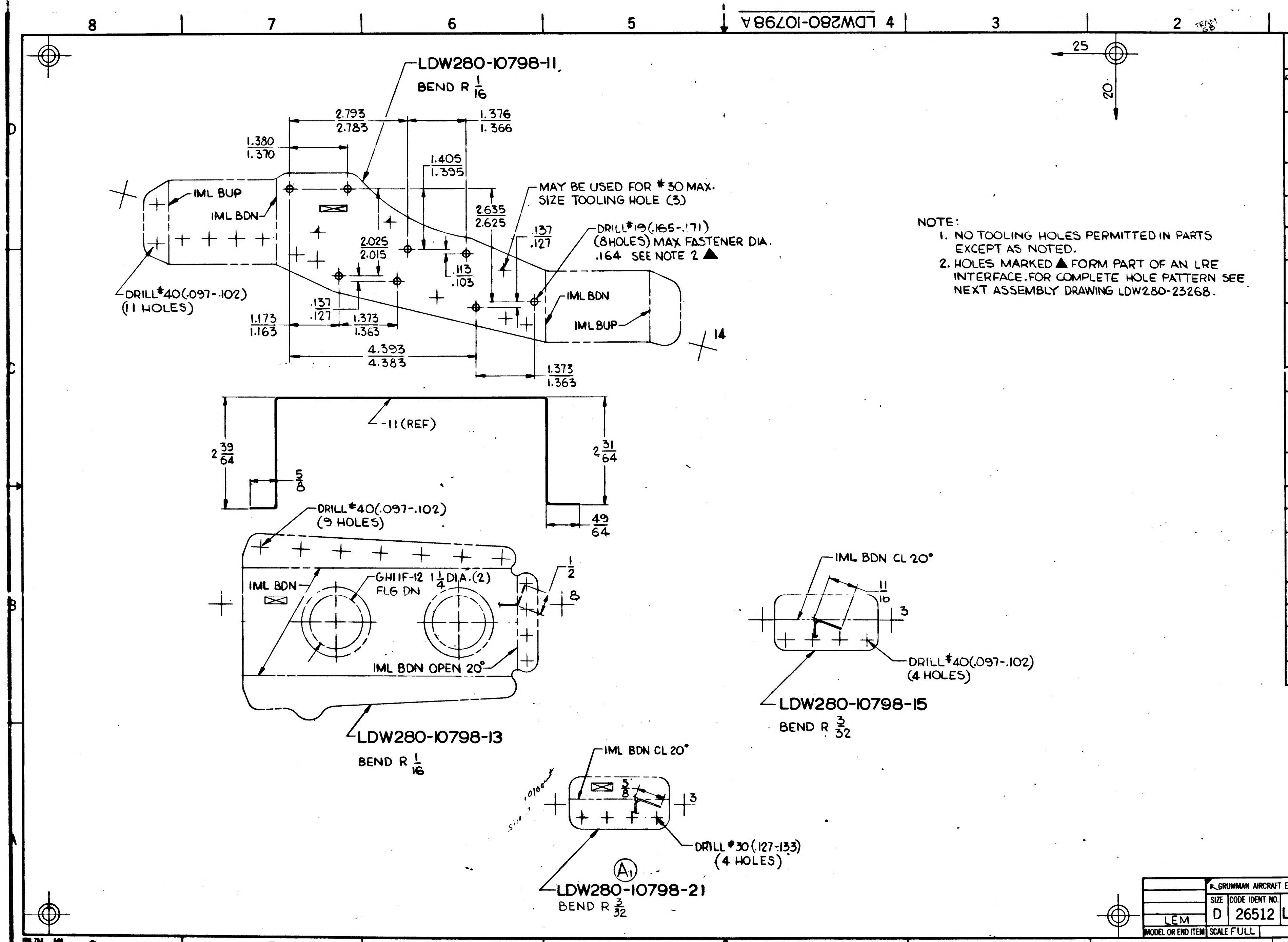
NAS 9-1100


LDW280-10798A
LDW280-10798-11
BEND R $\frac{1}{16}$
2.793
2.783
1.376
1.366
1.380
1.370
1.405
1.395
2.635
2.625
IML BUP
IML BDN
MAY BE USED FOR #30 MAX.
SIZE TOOLING HOLE (3)
.137
.127
DRILL #19(.165-.171)
(8 HOLES) MAX FASTENER DIA.
.164 SEE NOTE 2 ▲
2.025
2.015
.113
.103
DRILL #40(.097-.102)
(11 HOLES)
.137
.127
1.173
1.163
1.373
1.363
IML BDN
IML BUP
14
4.393
4.383
1.373
1.363
-11 (REF)
2 $\frac{39}{64}$
$\frac{5}{8}$
2 $\frac{31}{64}$
$\frac{49}{64}$
DRILL #40(.097-.102)
(9 HOLES)
IML BDN
GH11F-12 1 $\frac{1}{4}$ DIA.(2)
FLG DN
$\frac{1}{2}$
8
IML BDN OPEN 20°
LDW280-10798-13
BEND R $\frac{1}{16}$
IML BDN CL 20°
$\frac{11}{16}$
3
DRILL #40(.097-.102)
(4 HOLES)
LDW280-10798-15
BEND R $\frac{3}{32}$
IML BDN CL 20°
$\frac{3}{8}$
3
.010
DRILL #30(.127-.133)
(4 HOLES)
Ⓐ1
LDW280-10798-21
BEND R $\frac{3}{32}$
25
20
8
7
6
5
4
3
2
1
D
C
B

NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS EXCEPT AS NOTED.
2. HOLES MARKED ▲ FORM PART OF AN LRE INTERFACE. FOR COMPLETE HOLE PATTERN SEE NEXT ASSEMBLY DRAWING LDW280-23268.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-10798	A
	SCALE FULL		SHEET 3.00	

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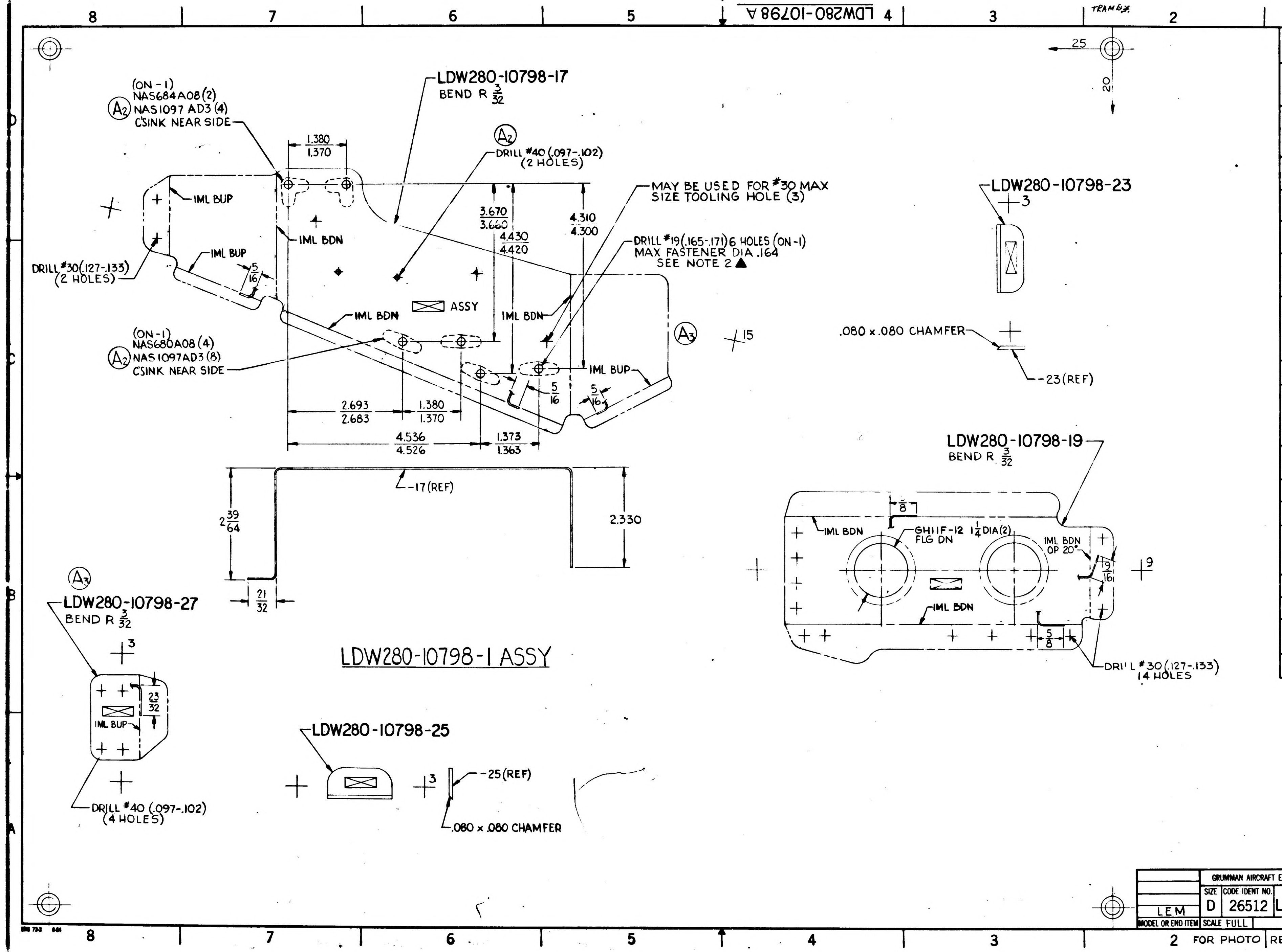
LDW280-10798 A
TRAM 6/3
(ON-1)
NAS684A08 (2)
A2 NAS1097 AD3 (4)
CSINK NEAR SIDE
LDW280-10798-17
BEND R 3/32
1.380
1.370
A2
DRILL #40 (.097-.102)
(2 HOLES)
MAY BE USED FOR #30 MAX
SIZE TOOLING HOLE (3)
DRILL #19 (.165-.171) 6 HOLES (ON-1)
MAX FASTENER DIA .164
SEE NOTE 2
IML BUP
IML BDN
3.670
3.660
4.430
4.420
4.310
4.300
DRILL #30 (.127-.133)
(2 HOLES)
5/16
ASSY
A3
15
(ON-1)
NAS680A08 (4)
A2 NAS1097AD3 (8)
CSINK NEAR SIDE
2.693
2.683
1.380
1.370
4.536
4.526
1.373
1.363
-17 (REF)
2 39/64
2.330
21/32
A3
LDW280-10798-27
BEND R 3/32
3
23/32
IML BUP
DRILL #40 (.097-.102)
(4 HOLES)
LDW280-10798-1 ASSY
LDW280-10798-25
3
-25 (REF)
.080 x .080 CHAMFER
25
20
LDW280-10798-23
3
.080 x .080 CHAMFER
-23 (REF)
LDW280-10798-19
BEND R 3/32
5/8
GH11F-12 1 1/4 DIA (2)
FLG DN
IML BDN
OP 20°
9
19/16
5/8
DRILL #30 (.127-.133)
14 HOLES
8
7
6
5
4
3
2
1
D
C
B
A

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES 015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-10798	A
	SCALE FULL		SHEET 4.00	

LDW280-10798 A

FOR PHOTO REPRODUCTION

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NAS 9-1100

23 *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

GMG 32.3 REV 2-65

DWG. NO. LEO280 | EO NO. 295
CONTROL INFO NO. LDW280A 0657

*TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10789	A3	SEE DRAWING
-10790	B1	
H 10792	C1	
-10796	A1	
-10798	B1	
-10800	B2	
H 10801	A1	
H 10802	B1	
H 10804	B1	
-10806	C1	
-10808	A1	
P 10809	B2	
-10811	B2	
-10813	B1	
-10814	B1	
-10815	A4	
-10817	A1	
-10838	B1	
-10846	C1	
-10927	B1	
-10934	A1	
-10953	B1	
-10954	A1	
-10955	A1	
-10961	A3	
P 10966	A4	
-10970	A1	
-10973	A1	
-10974	A1	
-10976	A1	
-10977	A1	
-10979	A1	
LDW280-10980	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL III ENGRG CHG ☐ CL II ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE: C LE 10-8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37), LEM	8(38), LEM-9(39)
LEM		LEM-10(40), LEM-1	1(41), LEM-12(42)
LEM		LEM-13(43), LEM-1	4(44), LEM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D REWORK SCRAP

APPROVED BY | DATE 9/13/66

VD!	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
			—	AW 9.21		RMC 10-6-66	AC 10-3-66

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO. LEO280

EO NO. 295

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 35

01
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW280-10798
EO NO. B2
CONTROL INFO NO. LDW280A-9314

IN M/B FOR -1, -19 & -21 REMOVE LM-4 THRU LM-15 EFF.

IN M/B FOR -23, -25 & -27 N/A LDW280-54268 EFF: LM-4 – LM-15

(WAS) N/A LDW280-23268 EFF: LM-4 – LM-15

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐ LCD 1014 3

REASON FOR EO: DUE TO RELOCATION OF TRANSDUCERS ON LM-4 - LM-15 NEW SUPPORT STRUCTURE IS REQUIRED

DESCRIPTION OF EO: IN M/B FOR -1, -19 & -21 REMOVED LM-4 – LM-15 EFF IN M/B FOR -23, -25 & -27 N/A FOR LM-4 – LM-15 EFF. (WAS) LDW280-23268

GAEC EO RELEASE: VC 9/29

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-4(34)	
		THRU	
LM		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK SCRAP -1, -19, -21

	R	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY					F.N.R.	B			
DATE		9/27			9/27/67			9/27	9-29-67

PRIORITY: C

DRAWING TITLE: BRACKET~A/S~MID-SECT -227.0 BLKD~PROPULSION PRESS X'DUCERS

DRAWING NO. LDW280-10798

EO NO. B2

ISSUED BY D. KLINGENER X7033 SECTION VDI GROUP NO. 335 PL 25

01 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER
*

DWG. NO. LDW280-10798 | EO NO. B3
CONTROL INFO NO. LDW280B0018

IN M/B FOR -1, -19 & -21 REINSTATE LM-4(34) & LM-5(35) EFF.
1 EACH REQ'D/MOD N/A LDW280-23268

IN M/B FOR -23, -25 & -27 N/A LDW280-23268 EFF: LM-4(34) & LM-5(35)
(WAS) LDW280-54268

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD 1014 (5)

REASON FOR EO: TRANSDUCER ASSY WILL NOT BE AVAILABLE UNTIL LM-6

DESCRIPTION OF EO: IN M/B FOR -1, -19 & -21 ADDED LM-4 & LM-5 EFF. ~ IN M/B FOR -23, -25 & -27 N/A LDW280-23268 EFF: LM 4 & 5 (WAS) LDW280-54268

GAEC EO RELEASE: JK 11/2/

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-4(34)	
LM		LM-5(35)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY							
REVISE DWG	RECORD EO	REWORK	SCRAP	DATE							
✓		NOT	REQ'D	10/28/67				10 28 67	10/30/67		10/30/67
				A	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

~~GOVT~~ 11-1-67

PRIORITY: C

DRAWING TITLE: BRACKET ~ A/S ~ MID SECT -72700 BLKD ~ PROPULSION PRESS X-DUCERS

DRAWING NO.: LDW280-10798

EO NO.: B3

11/6 ISSUED BY D. KLINGENER X7033 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280 23020	LTA-3(13)	2
PART NO. LDW 280-10800-15		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-56020	LEM-6(36)	2
↕	LDW280-55020	LEM-5(35)	2
	LDW280-54020	LEM-4(34)	2
LEM	LDW280-53020	LEM-3(33)	2
PART NO. LDW280-10800-17		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-56020	LEM-6(36)	1 EA
↕	LDW280-55020	LEM-5(35)	1 EA
	LDW280-54020	LEM-4(34)	1 EA
	LDW280-53020	LEM-3(33)	1 EA
LEM	LDW280-23020	LTA-3(13)	1 EA
PART NO. LDW280-10800-11, -12, -13 & -14		GAEC SCH NO. 32-4	

(3)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-17

GRUMMAN REL^c INFO A

PRIM NO.	FR(001)
215	22-17

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/64 ± .020 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS-9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	E. POEHLMAN 2-21-66	WEIGHTS	A Robrock DJU 3-3
LAYOUT BY	J. BLAZOSKY JHB		
CHECKED BY	M 2-24-66		
GR. LEADER	K Phillips 2/26/66		
VEH. DES. INT	WR Bro 3/3		
		PROJ ENGR	Acker RMC 3/7/66
STRUCTURE	FCB BW 3-3	REL GROUP	A. Cummings 3-8
STRUCTURE	Alderman 3-3		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

STIFFNERS
ASCENT STAGE - MID-SECT FWD SKIN

SIZE	CODE IDENT NO.		
B	26512	LDW280-10800	A
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 9-64

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1,1.10,2 3					✓	EO A1	ADDED SH 1.10 SH 1 OF 4 WAS 1 OF 3 IN FIELD & B/M: ADDED -17. RESTRICTED -15 TO LTA-3	LEM-3,4,-5, -6, LTA-3		✓	LeCun 7/11/66	☒	☒

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS					
	A										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10800	A
SCALE	NONE		SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10800-17	E	TEE	AL ALY EXTR	QQ-A-200/11	7075-T6511	DIE #33481 × 7/8	NONE	88	
		LDW280-10800 -15	E	TEE	AL ALY EXTR	QQ-A-200/11	7075-T6511	DIE #33481 × 7/8	NONE	88	
		-14	↕	STIFFNER	AL ALY SH	QQ-A-250/12	7075	.050 × 3 × 6 3/8	T6	↕	
		-13	↕	↕	↕	↕	↕	.050 × 3 × 6 3/8	↕	↕	
		-12	↕		↕	↕	↕	.050 × 2 5/8 × 5 7/8	↕	↕	
		LDW280-10800-11	E	STIFFNER	AL ALY SH	QQ-A-250/12	7075	.050 × 2 5/8 × 5 7/8	T6	88	

(3)

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030
T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

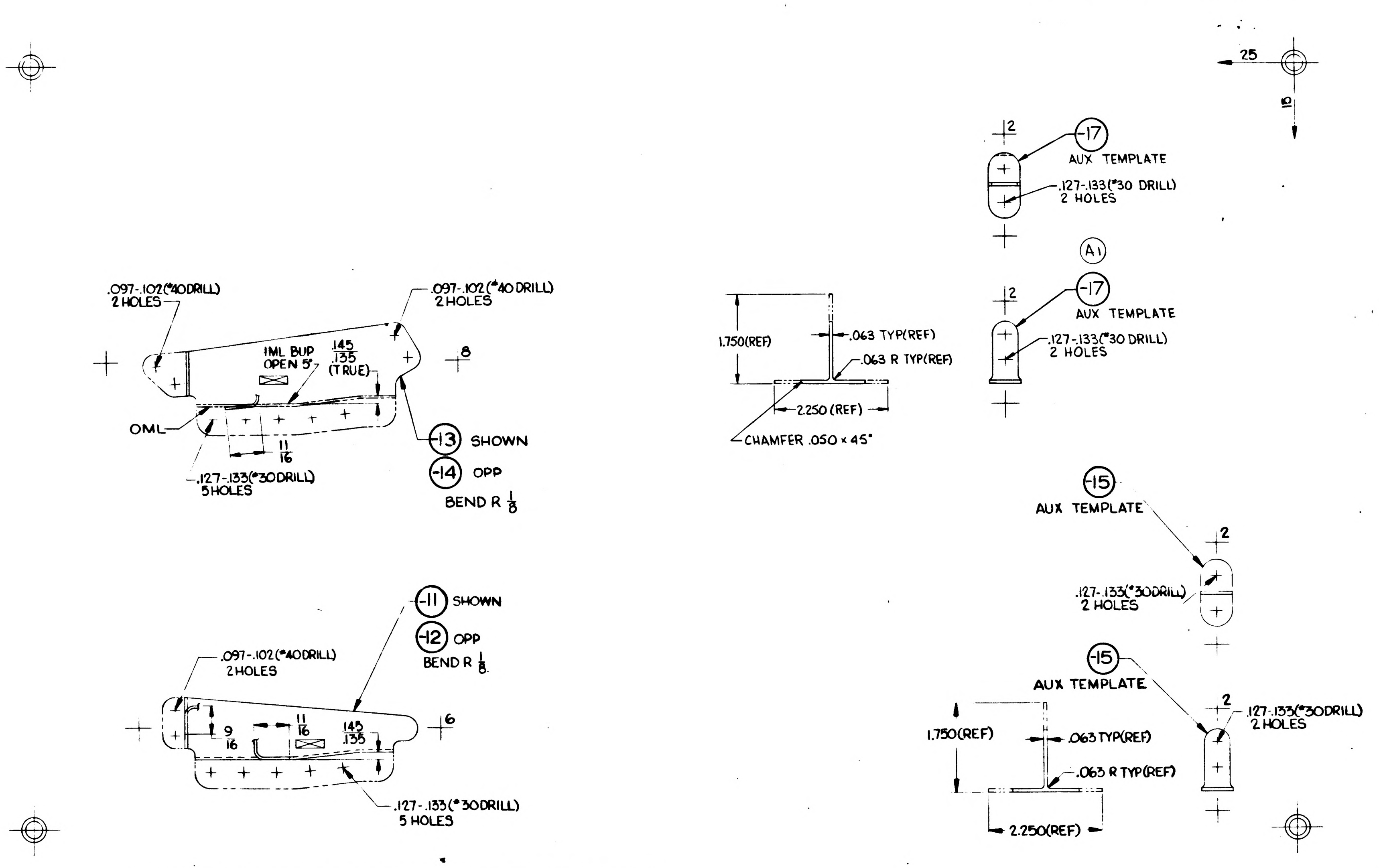
SIZE	CODE IDENT NO.		
B	26512	LDW280-10800	A
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS



25
15
-17 AUX TEMPLATE
2
.127-.133(#30 DRILL) 2 HOLES
A1
-17 AUX TEMPLATE
2
.127-.133(#30 DRILL) 2 HOLES
.097-.102(#40 DRILL) 2 HOLES
.097-.102(#40 DRILL) 2 HOLES
IML BUP OPEN 5°
.145 .135 (TRUE)
8
OML
11/16
.127-.133(#30 DRILL) 5 HOLES
-13 SHOWN
-14 OPP
BEND R 1/8
1.750(REF)
.063 TYP(REF)
.063 R TYP(REF)
2.250 (REF)
CHAMFER .050 × 45°
-15 AUX TEMPLATE
2
.127-.133(#30 DRILL) 2 HOLES
-11 SHOWN
-12 OPP
BEND R 1/8
.097-.102(#40 DRILL) 2 HOLES
9/16
11/16
.145 .135
6
.127-.133(#30 DRILL) 5 HOLES
-15 AUX TEMPLATE
2
.127-.133(#30 DRILL) 2 HOLES
1.750(REF)
.063 TYP(REF)
.063 R TYP(REF)
2.250(REF)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

LEM	SIZE D	CODE IDENT NO. 26512	LDW280-10800	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

LDW280-10800 A

23 *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280
EO NO. 295
CONTROL INFO NO. LDW230A 0657

*

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9 (39), LEM-10(40), LEM-11(41), LEM-12 (42), LEM-13(43) LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10789	A3	SEE DRAWING
-10790	B1	
H 10792	C1	
-10796	A1	
-10798	B1	
-10800	B2	
H 10801	A1	
H 10802	B1	
H 10804	B1	
-10806	C1	
-10808	A1	
P 10809	B2	
-10811	B2	
-10813	B1	
-10814	B1	
-10815	A4	
-10817	A1	
-10838	B1	
-10846	C1	
-10927	B1	
-10934	A1	
-10953	B1	
-10954	A1	
-10955	A1	
-10961	A3	
P 10966	A4	
-10970	A1	
-10973	A1	
-10974	A1	
-10976	A1	
-10977	A1	
-10979	A1	
LDW280-10980	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ
CL II ENGRG CHG
CL I ENGRG CHG

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE: C
LE 10-8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR NO.
LEM		LEM-7(37) LEM-8(38) LEM-9(39)	
LEM		LEM-10(40) LEM-11(41) LEM-12(42)	
LEM		LEM-13(43) LEM-14(44) LEM-15(45)	

DRAWING CHANGE REQD: ✓ REVISE DWG ☐ RECORD EO
DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)
APPROVED BY: VD.I.
DATE: 9/13/66
SUPPORT
RELIAB. GROUP
GROUP LEADER
STRESS GROUP
LIAISON ENGRG
PROJ ENGRG: 10-6-66
GOVT: 10-3-66

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LE0280
EO NO.: 295

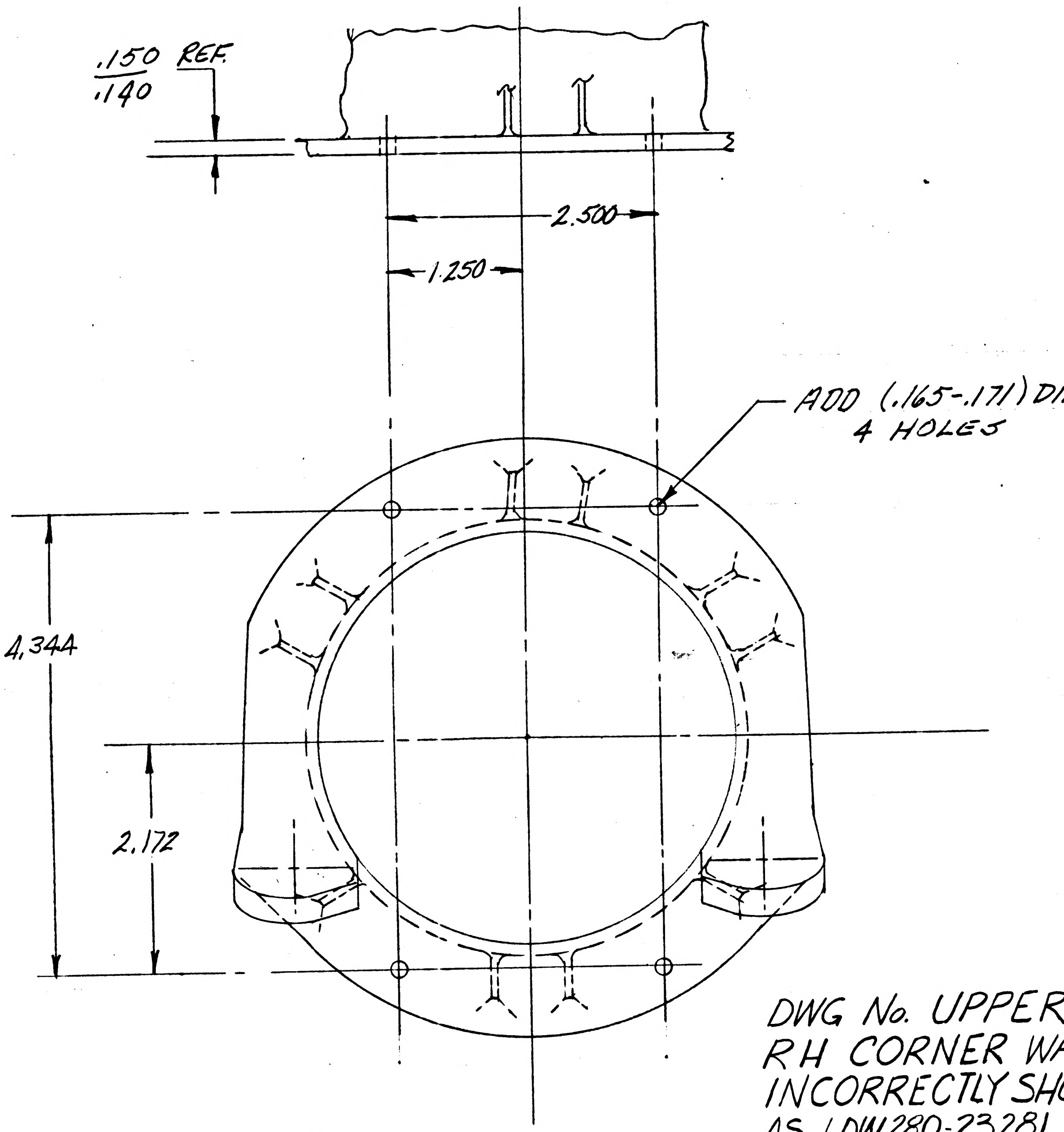
ISSUED BY L. DETURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 230 PL 35

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280M10804		EO NO. B5	
CONTROL INFO NO. LDW 280 A 2343			



DWG No. UPPER
RH CORNER WAS
INCORRECTLY SHOWN
AS LDW280-23281

PARTIAL RECORD E.O
FOR LTA-3 ONLY
THIS CHANGE NOT TO
BE INCL. ON LTA-3

LDW280M10804-3

PARTIAL
RECORD E.O.

22

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: PROVIDE FOR SHIELDING SUPPORT

DESCRIPTION OF EO: FOR-3 ADDED: (.165-.171) DIA, -4 HOLES, ADDED EO TO RECORD BLOCK FOR LTA-3

Ⓡ GAEC C EO RELEASE: FR 10/20/6

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA3(13) LTA8(18)	
LM		LM-1(31) THRU	
LM		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
✓	✓	✓	

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY		—		—		—		
DATE	10/20/66	—		—	10-20	—	10-20-6	10/20/66
	VDI							

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	FITTING ASS'Y A/S -- 1/S - SBAND STEER. ANT. INTERFACE	LDW280M10804	B5

ISSUED BY E.E. PABST (x7033) SECTION VDI GROUP NO. 335 PL 35
EMF

0 1

NAS 9-1100

LDW280-10806 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23253	LEM-3(33)	1 EA
↕	LDW280-28253	LEM-2(32)	↕
	LDW280-28253	LEM-1(31)	
LEM	LDW280-28253	LTA-8(18)	1 EA
PART NO. LDW280-10806-17&-19		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23253	LEM-6(36)	1 EA
↕	↕	LEM-5(35)	↕
		LEM-4(34)	
LEM	LDW280-23253	LTA-3(13)	1 EA
PART NO. LDW280-10806-11&-13		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM.	LDW280-23253	LEM-6(36)	1
↕	↕	LEM-5(35)	1
		LEM-4(34)	1
		LEM-3(33)	1
	LDW280-23253	LTA-3(13	1
	LDW280-28253	LEM-2(32)	1
	LDW280-28253	LEM-1(31)	1
LEM	LDW280-28253	LTA-8(18)	1
PART NO. LDW280-10806-15		GAEC SCH NO. 32-2	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO B		
LAST DASH NO. USED	-19	PRIM NO.	LE(001)	
		215	MP 7/23/6 B	5/3/?? A

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	LOWENSTEIN 3/9/66	RELIABILITY	
LAYOUT BY	LOWENSTEIN		
CHECKED BY			
GR. LEADER	R.J. PHILLIPS 3/9/66		
VEH DES INT	BISCHOFF 3/10/66		
STRUCTURES	F.B. 3/11/66	PROJ ENGR	J. ALBER 3/17/66
STRUCTURES	HILDERMAN 3/11/66	REL GROUP	BOTTI 3/19/66
WEIGHTS	ROBESCH 3/14/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ZEE
ASCENT STAGE ~ MID SECTION
E.C.S. PUMP & HEAT EXCHANGER

SIZE B
CODE IDENT NO. 26512
LDW280-10806 B
SCALE NONE
SHEET 1.00 OF 4

THIS DWG SUPERSEDES LDW280-10806 "NO CHANGE" 5-7-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	APPD
											REWORK	SCRAP			
A	1	1,1.10,2 & 3							Ⓡ RETRACED NO CHANGE LAST REVISION NO CHANGE. SH 1OF4 WAS 1OF1. LOFTED DWG WAS DIMENSIONED.				EG JAEGGI 5-12-66		AC
B	1	1.00,1.10, 2.00 & 3.00						EO B1	IN FIELD & B/M: ADDED -17 & -19. IN MOD BLOCK: RESTRICTED -11 & -13 TO LTA-3, LEM-4,-5 & -6 (WAS LTA-1,-3 & -8, LEM-1,-2,-3,-4,-5 & -6	LTA-1-3 & -8 LEM-1 THRU-6	✓		DAGOSTO 7-9-66		
	2	1.10							Ⓡ REF EO B1 EFFECTIVITY LTA-1 DOES NOT EXIST	LTA-1	NOT	REQD	RS	WP	Ⓡ 8-2-66

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10806	B
SCALE NONE			SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10806-19	E	ZEE	AL ALY SH	QQ-A-250/12	7075	.063×2¼×11¾	T6	88	6C
		-17	E	ZEE	↕	↕	↕	.063×2¼×12½	↕	↕	6D
		-15	E	ANGLE	↕	↕	↕	.050X3X13½	↕	↕	6B
		-13	E	ZEE	↕	↕	↕	.063X2¼X11¾	↕	↕	6C
		LDW280-10806-11	E	ZEE	AL ALY SH	QQ-A-250/12	7075	.063X2¼X12½	T6	88	6D

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
			88	ANODIZE	LSP14-9030	T-6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10806	B

SCALE NONE
SHEET 2.00

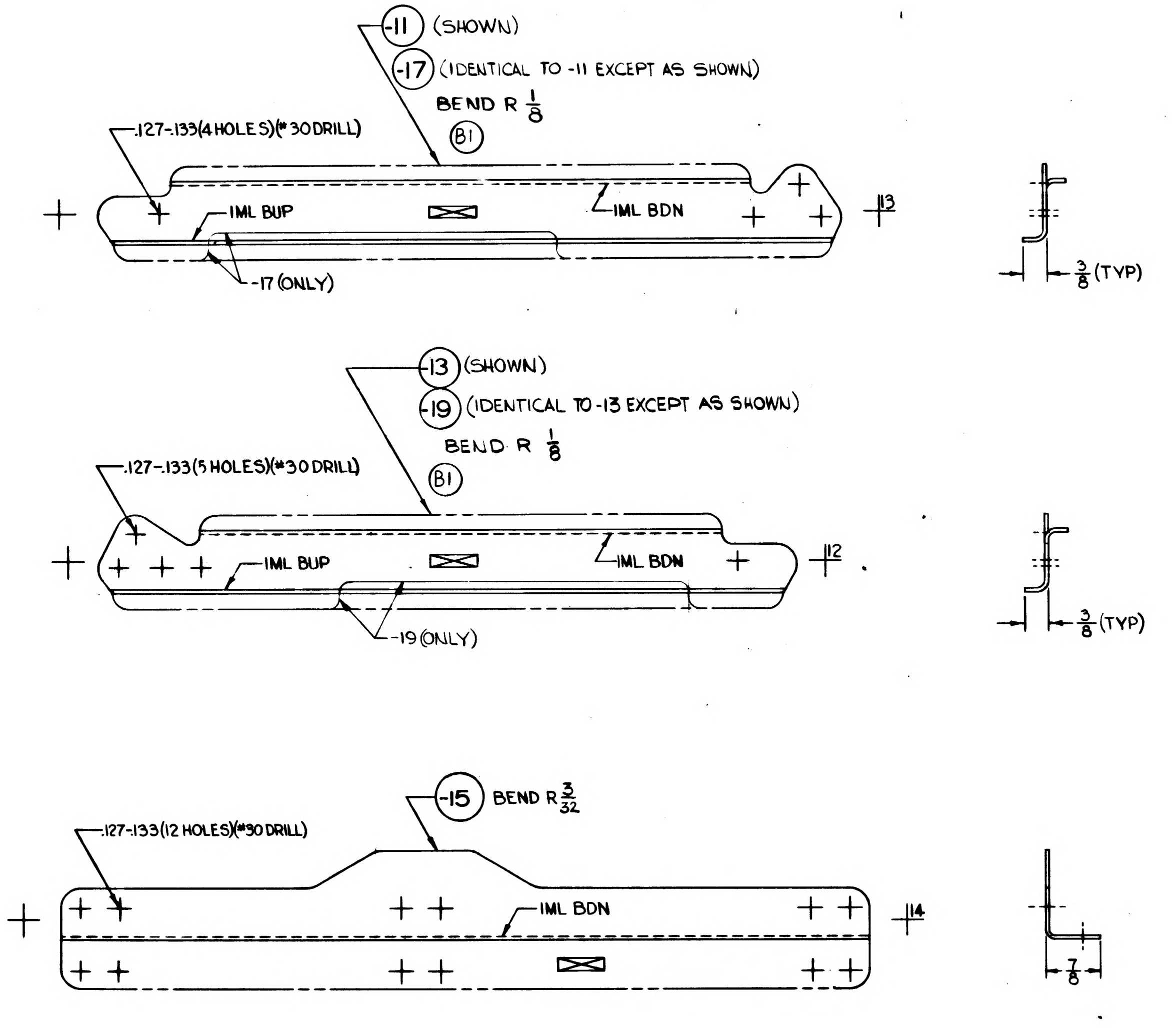
ENG 77.2 7-65

01

NAS 9-1100

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.


-11 (SHOWN)
-17 (IDENTICAL TO -11 EXCEPT AS SHOWN)
BEND R 1/8
B1
.127-.133 (4 HOLES) (#30 DRILL)
IML BUP
IML BDN
-17 (ONLY)
13
3/8 (TYP)
-13 (SHOWN)
-19 (IDENTICAL TO -13 EXCEPT AS SHOWN)
BEND R 1/8
B1
.127-.133 (5 HOLES) (#30 DRILL)
IML BUP
IML BDN
12
-19 (ONLY)
3/8 (TYP)
-15 BEND R 3/32
.127-.133 (12 HOLES) (#30 DRILL)
IML BDN
14
7/8
25
15

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-10806	B
SCALE FULL			SHEET 3.00	

FOR PHOTO REPRODUCTION

KI

LDW280-10806 B

NAS 9-1100

01

23 | ENG 32.2 REV 2-65 | *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE028C | EO NO 295
CONTROL I FO NO. LDW280A 0657

*TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9 (39), LEM-10(40), LEM-11(41), LEM-12 (42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4 34

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10789	A3	SEE DRAWING
-10790	B1	
H 10792	C1	
-10796	A1	
-10798	B1	
-10800	B2	
H 10801	A1	
H 10802	B1	
H 10804	B1	
-10806	C1	
-10808	A1	
P 10809	B2	
-10811	B2	
-10813	B1	
-10814	B1	
-10815	A4	
-10817	A1	
-10838	B1	
-10846	C1	
-10927	B1	
-10934	A1	
-10953	B1	
-10954	A1	
-10955	A1	
-10961	A3	
P 10966	A4	
-10970	A1	
-10973	A1	
-10974	A1	
-10976	A1	
-10977	A1	
-10979	A1	
LDW280-10980	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ | CL III ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE: C | LE | 08

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM	8(38) LEM-9(39)
LEM		LEM-10(40) LEM-	11(41) LEM 12(42)
LEM		LEM-13(43) LEM-	14(44) LEM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: NOT REQ'D
APPROVED BY | DATE 9/13/66
PROJ ENGRG 10-6-66 | GOVT 10-3-66
PRIORITY C
DRAWING TITLE: NOTED
DRAWING NO. LE0280
EO NO. 295

ISSUED BY L. DE TURRIS 7-18-66 X 1441 SECTION VEHICLE DESIGN INT. GROUP NO 280 PL 35

01
NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10806 | EO NO. CV
CONTROL INFO NO. LDW280A 3977

ON -15, -17 & -19 ON SHT. # 1.

N/A LDW 280-28253 FOR LM-3(33) WAS LDW 280-23253

3

DETAIL SPEC REQ ☐ | CL II ENGRG CHG ☐ | CL I ENGRG CHG ☐

REASON FOR EO: DWG. CORRECTION

DESCRIPTION OF EO: FOR -15, -17 & -19 N/A WAS LDW 280-23253 FOR LM-3 (33)

GAEC C EO RELEASE: 12/12

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3/33)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓		NOT REQD	
REVISE DWG	RECORD EO	REWORK	SCRAP

APPROVED BY	RVP EJ			—			RMG		
DATE	12-5-66			—			12-7-66		
6	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GAEC~~	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	ZEE A/S. M/S. ECS PUMP & HEAT EXCHANGER	LDW280-10806	CV

ISSUED BY J.J. LEONARD X1441 12/2/66 SECTION VDI GROUP NO. 335 PL 35

01 NAS 9-1100

LDW280-10807

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23018	LEM-6(36)	1
		LEM-5(35)	1
		LEM-4(34)	1
		LEM-3(33)	1
LEM	LDW280-23018	LTA-3 (13)	1
PART NO. LDW280-10807-15		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23018	LEM-3(33)	1
LEM	LDW280-23018	LTA-3(13)	1
PART NO. LDW280-10807-11		GAEC SCH NO.	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10		2.00			3.00		
REV	B	B		B			B		
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO B			
LAST DASH NO. USED	-15	PRIM NO.			
		LE(001)	MP-B	7-8-6	x

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100 | LINE ITEM 1 | DOCUMENTATION TYPE II

DRAWN BY	J.J.LEONARD 1-28-66	RELIABILITY	
LAYOUT BY	J.J.LEONARD		
CHECKED BY			
GP LEADER	R.V.PHILLIPS 2-2-66		
VEH DES INT	W.BISCHOFF 2-3-66		
STRUCTURES	HILDERMAN 2-3	PROJ ENGR	C.W.RATHKE 2-3
STRUCTURES		REL GROUP	C.BOTTI 2-5-66
WEIGHTS	D.ROBESCH 2-3		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

WEB (BHD - REWORK)
ASCENT STAGE MID-SECTION, +Z27 BHD
AT -Y22

SIZE	CODE IDENT NO.		
B	26512	LDW280-10807	B
SCALE	NONE	SHEET 1.00 OF 4	

THIS DRAWING SUPERSEDES LDW280-10807 A 6-21-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED, NO CHANGE; LAST REV. 'A'. LOFTED DWG WAS DIMENSIONED. ADDED SH 1.10, 2.00, & 3.00. SH 1.00 OF 4 WAS SH 1 OF 1 M.C. LOEW JUNE 21, 1966						
B	1	1.00, 1.10, 2.00						EO B1	IN B/M, PROCESS SYMBOL BLOCK FOR -13 T62 WAS NONE.	LTA-3 LEM-3 THRU -6	✓		M.C. LOEW 6-21-66		
	2	1.00, 1.10, 2.00, 3.00						EO B2	IN FLD & B/M, ADDED -15, REMOVED -13. RESTRICTED -11 TO LTA-3 & LEM-3.			-13			
	3	1.10, 3.00							ADDED DRILL CALL OUT (#40 DRILL) 151 HOLES EG	LTA-3 & LEM-3	-11				

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10807	B
SCALE NONE		SHEET 1.10	

ENG 77.3 5-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10807-15	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.040×1⅞ × 5⅜	T6	88	7A
		LDW280-10807-11	E	DOUBLER	AL ALLOY SH	MIL-A-8920	2219-T81	.080×17×33	CM	NONE	4C

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
CM	CHEM-MILL	LSP-14-26100
88	ANODIZE	LSP-14-9030
T6	HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

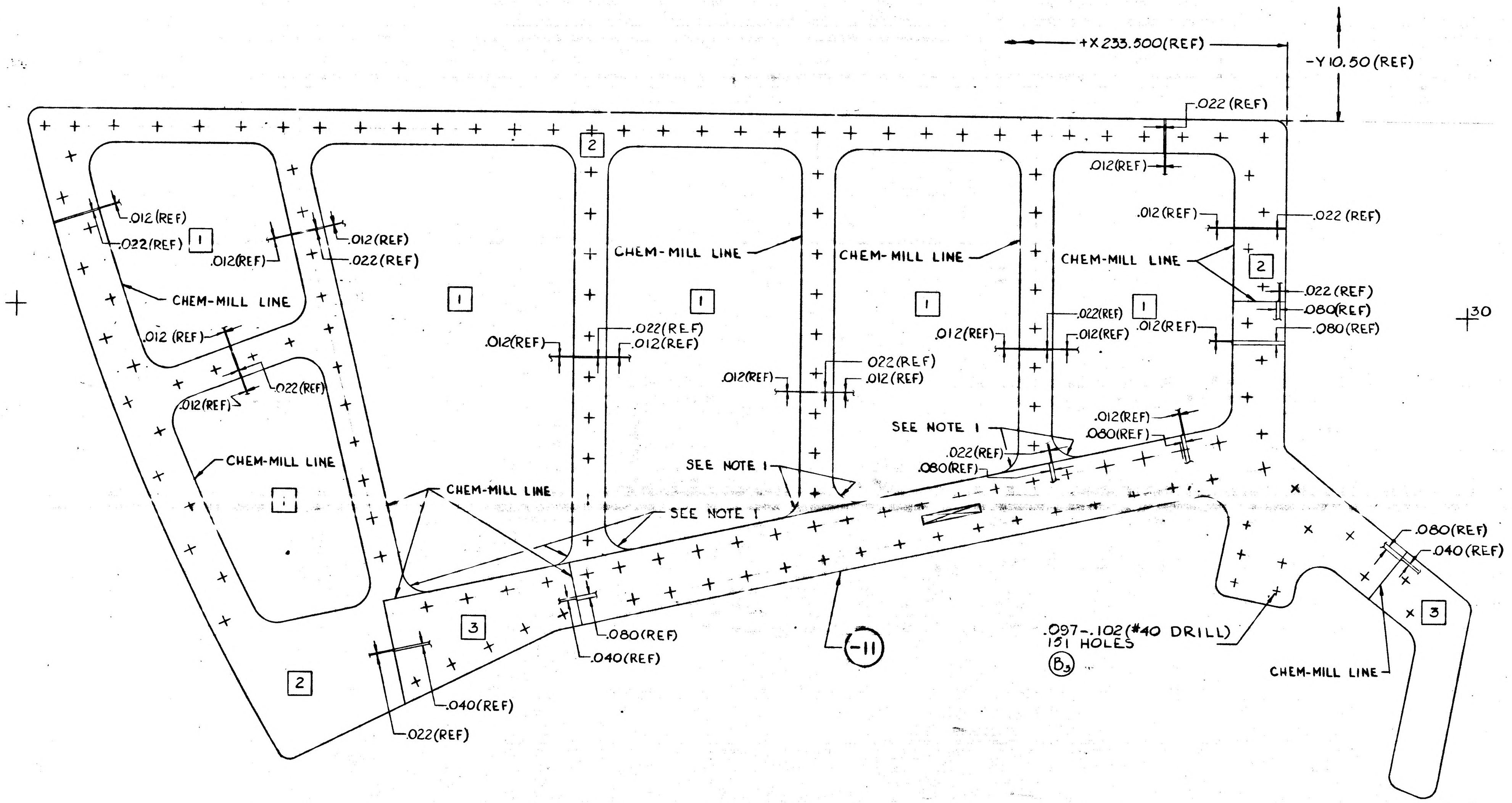
SIZE B
CODE IDENT NO. 26512
LDW280 - 10807 B
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTE
1. TOLERANCE: ±.125 AT TANGENCY POINTS OF CHEM-MILL LINE CORNER RADII BETWEEN TWO ETCHED SURFACES.
2. NO TOOLING HOLES PERMITTED IN PARTS.



+X 233.500 (REF)
-Y 10.50 (REF)
.022 (REF)
.012 (REF)
.022 (REF)
.012 (REF)
.022 (REF)
.012 (REF)
.022 (REF)
.012 (REF)
.022 (REF)
.022 (REF)
.080 (REF)
.080 (REF)
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CHEM-MILL LINE
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CHEM-MILL LINE
CHEM-MILL LINE
SEE NOTE 1
SEE NOTE 1
SEE NOTE 1
1
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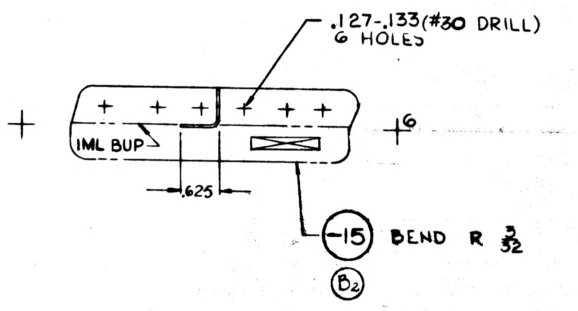
1
1
1
2
2
2
3
3
.080 (REF)
.040 (REF)
.080 (REF)
.040 (REF)
.040 (REF)
.022 (REF)
-11
.097-.102 (#40 DRILL)
151 HOLES
B3
35
30
30



.127-.133 (#30 DRILL)
6 HOLES
IML BUP
.625
6
-15
BEND R 3/32
B2

LDW280-10807-11

CHEM-MILL LINE TOLERANCE:
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED.
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING
1	.012 +.002 -.002
2	.022 +.002 -.002
3	.040 +.003 -.002

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD 10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

LEM	SIZE E	CODE IDENT NO. 26512	LDW28 10807	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

LDW280-10807 B

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ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW 280-10807
EO NO. C1
CONTROL INFO NO. LDW 280A-4919

ON SHT. #1.00 FOR -15
DELETE REQ. FOR LM-4(34), LM-5(35) & LM-6(36)

ON SHT. #1.00 FOR -11 & -15
N/A FOR LM-3(33) S/B LDW 280-53018 (WAS LDW280-23018)

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: CORRECT DWG. TO AGREE WITH N/A & TO ADD CORRECT N/A FOR LM-3

DESCRIPTION OF EO: FOR -15 EFF. WAS LTA-3, LM-3 THROUGH LM-6. FOR -11 & -15 N/A FOR LM-3 WAS LDW280-23018

GAEC C EO RELEASE: 3 E 1/13/7

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LM-3(33)		

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			-15 ✓

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY				—				RP
DATE	1/12/67			—			1/12/67	1/12/67
6	VD1							

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	A/S M/S WEB (BHD. REWORK) + Z 27 BHD. AT -Y22	LDW280-10807	C1

ISSUED BY J. J. LEONARD x1153 1/12/67 SECTION VD1. GROUP NO. 335 PL 35

01

NAS 9-1100

23 ENG 33.2 REV 2-65 *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO LE0280 EO NO 295
CONTROL INFO NO. LDW280A0657

* TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4.34.

DRAWING NUMBER	CHANGE NUMBER	TITLE
✓ LDW280-10789	A3	SEE DRAWING
✓ -10790	B1	
✓ H 10792	C1	
✓ -10796	A1	
✓ -10798	B1	
✓ -10800	B2	
✓ H 10801	A1	
✓ H 10802	B1	
✓ H 10804	B1	
✓ -10806	C1	
✓ -10808	A1	
P 10809	B2	
-10811	B2	
-10813	B1	
-10814	B1	
-10815	A4	
-10817	A1	
-10838	B1	
-10846	C1	
-10927	B1	
-10934	A1	
-10953	B1	
-10954	A1	
-10955	A1	
-10961	A3	
P 10966	A4	
-10970	A1	
-10973	A1	
-10974	A1	
-10976	A1	
-10977	A1	
-10979	A1	
LDW280-10980	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF. ×

GAEC EO RELEASE: C LE 108

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37), LEM-8	(38), LEM-9(39)
LEM		LEM-10(40), LEM-	11(41), LEM-12(42)
LEM		LEM-13(43), LEM-14	(44), LEM-15(45)

DRAWING CHANGE REQD: ✓ REVISE DWG
DISPOSITION OF PARTS: NOT REQ'D
APPROVED BY: RJP
DATE: 9/13/66
VDI
STRESS GROUP: AW 9.3
PROJ ENGRG: RMC 10-6-66
GOVT: AC 10-3-66
PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LE0280
EO NO.: 295

ISSUED BY L. DETURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO 220 PL 35

01 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10808
EO NO. A2
CONTROL INFO NO. LDW 280A 3966

FOR -11, -13 & -15 - ON SHT #1
N/A LDW280-28253 FOR LM-3(33) WAS LDW 280-23253

3

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☐

REASON FOR EO	DESCRIPTION OF EO	EO	GAEC RELEASE
DWG CORRECTION	FOR -11, -13 & -15 N/A WAS LDW 280-23253 FOR LM-3(33)	6	12/12

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3(33)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓		NOT REQD.	
REVISE DWG	RECORD EO	REWORK	SCRAP

APPROVED BY	RVP			—				
DATE	12-5-66			—	12-6		12-7-66	12/7/66
6	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	A/S-M/S - SUPT. INSTL. ECS. CHANNEL PUMP & HEAT. EXC.	LDW 280 - 10808	A2

ISSUED BY J.J. LEONARD x1441 12/2/66 SECTION V.D.I. GROUP NO. 335 PL 35

01

NAS 9-1100

LDW280-10811 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23266	LEM-6(36)	1EA
		LEM-5(35)	1EA
		LEM-4([illegible])	1EA
		LEM-3(33)	1EA
		LEM-2(32)	1EA
		LEM-1(31)	1EA
		LTA-8(18)	1EA
LEM	LDW280-23266	LTA-3(15)	1EA

PART NO. LDW280-10811-11 & -12

GAEC SCH NO. 31-1

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A

LAST SECT LTR USED

LAST DASH NO. USED -12

GRUMMAN REL^c INFO A

PRIM NO. 215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.030 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	T.MASSEY 1-31-66	RELIABILITY	
LAYOUT BY		RCS	R.HAGERMAN 3-11
CHECKED BY			
GR LEADER	R.PHILLIPS 2-26-66		
VEH DES INT	W.BISCHOFF 2-26		
STRUCTURE	FEB 3-1	PROJ ENGR	J.ALBER 3-14-66
STRUCTURE	HILDERMAN 3-1	REL GROUP	BOTTI 3-16-66
WEIGHTS	D.ROBESCH 3-3		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HAT
ASCENT STAGE-MID SECT-THRUSTER
CLUSTER-PROPELLANT LINE SUPPORT

SIZE B
CODE IDENT NO. 26512
LDW280-10811 A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-10811 NO CHANGE 8-11-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE LAST REV NO CHANGE SH 1.00 OF 4 WAS 1 OF 1 LOFTED DRAWING WAS DIMENSIONED DWG	E. SICK	8-11-	66			
A	1	1.00, 1.10, 2.00 & 3.00						EO A1 Ⓡ	IN F/D ON-11 & -12 9/16 WAS 17/32, REMOVED BR .125 ADDED 1/4 TYP, 4 EQ SPACES WAS 4 EQ SPACES @ 2.000 = 8.000	LTA-3 & -8 LEM-1 THRU -6	✓		ESICK 8-11-66 RM		

	CHG APPROVED											
	LTR	GROUP LDR	VEHDESINT	STRUCTURE	STRUCTURE	WEIGHTS	RELIABILITY	RCS	PROJECT	RELEASE		
	A											

©GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10811	A

SCALE NONE

SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10811-12	E	HAT	AL ALLOY SH	QQ-A-250/4	2024-T3	.032×5¾×17½	NONE	88	
								LDW280-10811-11	E	HAT	AL ALLOY SH	QQ-A-250/4	2024-T3	.032×5¾×17½	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B

CODE IDENT NO. 26512

LDW280-10811

A

SCALE NONE

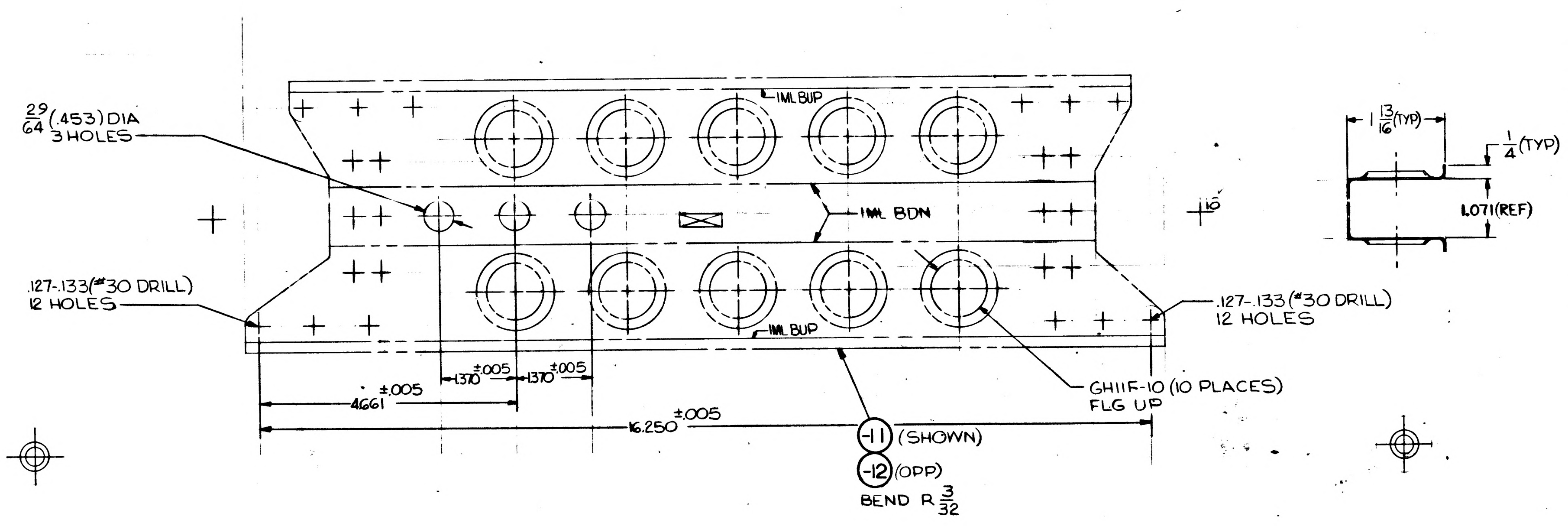
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTE.
1. NO TOOLING HOLES PERMITTED IN PARTS.


$\frac{29}{64}$ (.453) DIA
3 HOLES
.127-.133 (#30 DRILL)
12 HOLES
IML BUP
IML BDN
IML BUP
.127-.133 (#30 DRILL)
12 HOLES
GH11F-10 (10 PLACES)
FLG UP
1.370 ±.005
1.370 ±.005
4.661 ±.005
16.250 ±.005
-11 (SHOWN)
-12 (OPP)
BEND R $\frac{3}{32}$
1 $\frac{13}{16}$ (TYP)
$\frac{1}{4}$ (TYP)
1.071 (REF)

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	✓
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

LEM	SIZE D	CODE IDENT NO. 26512	LDW280-10811	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

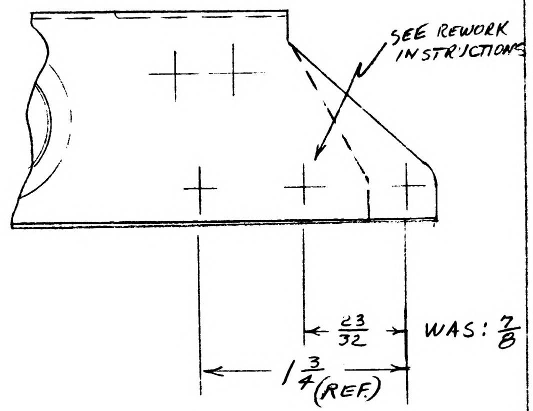
ENG 32.1 REV 3-65

LIAISON ENGINEERING #5

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

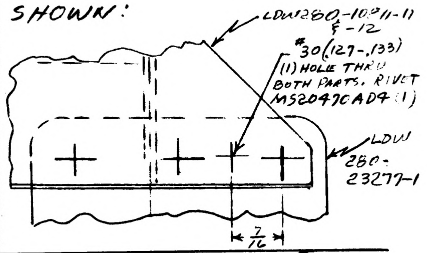
DWG. NO. LDW280-10811		EO NO. B1
CONTROL INFO NO. LM-5-9171		

ON -11 & -12
IN FLD / DWG:



SEE REWORK INSTRUCTIONS
23/32
WAS: 7/8
1 3/4 (REF.)

REWORK INSTRUCTIONS:
1) ON LDW280-10811-11 & -12 PARTS WHICH MAY HAVE BEEN DRILLED TO BE PLUGED WITH NAS1097AD4 FLUSH BOTH SIDES.
2) ON LM-3, ASSY LDW280-23266, INSERT RIVET AT THE 7/16 DIMENSION & FORM TAIL TO THE ANGLE & CONFIGURATION OF THE WELD AREA. ADD ANOTHER HOLE & RIVET AS SHOWN:



LDW280-10811-11 & -12
#30 (127-.133) (1) HOLE THRU BOTH PARTS. RIVET MS20470AD4 (1)
LDW 280-23277-1
7/16

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG		5

REASON FOR EO: HOLE LOCATED ON THE 7/8 DIMENSION BREAKS THRU THE WELD OF LDW280-23277-1

DESCRIPTION OF EO: ON -11 & -12 IN FLD 23/32 DIM. WAS: 7/8

GAEC © EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LM-1 (31)	LM-4 (34)	LTA-3 (13)
	LM-2 (32)	LM-5 (35)	LTA-8 (1E
	LM-3 (33)	LM-6 (36)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓ REVISE DWG	RECORD EO	✓ REWORK	SCRAP

PRIORITY: C

APPROVED BY								
DATE	10/8				9-29-66	9-28-66	10-1-66	9-30-66
9-28-66	VDI	SUPPORT	RELIAB. GROUP	~~GROUP LEADER~~	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

DRAWING TITLE	DRAWING NO.	EO NO.
HAT DESC STG-MID-SECT-THRUSTER CLUSTER PROPELLANT LINE SUPPORT	LDW280-10811	B1

ISSUED BY LIAISON, P. HUSTED, X6453 SECTION V.D.I. GROUP NO. 335 PL 35

23 *

GMO 32.2 REV 2-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. I.D. LE0280		EO NO. 295
CONTROL INFO NO. LDW280A 0657		

*

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4 34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10789	A3	SEE DRAWING
-10790	B1	
H 10792	C1	
-10796	A1	
-10798	B1	
-10800	B2	
H 10801	A1	
H 10802	B1	
H 10804	B1	
-10806	C1	
-10808	A1	
P 10809	B2	
-10811	B2	
-10813	B1	
-10814	B1	
-10815	A4	
-10817	A1	
-10838	B1	
-10846	C1	
-10927	B1	
-10934	A1	
-10953	B1	
-10954	A1	
-10955	A1	
-10961	A3	
P 10966	A4	
-10970	A1	
-10973	A1	
-10974	A1	
-10976	A1	
-10977	A1	
-10979	A1	
LDW280-10980	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF. ×

GAEC EO RELEASE C: LE 10-8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT I.D.
LEM		LEM-7(37) LEM-8(38)	LEM-9(39)
LEM		LEM-10(40) LEM-11	(41) LEM-12(42)
LEM		LEM-13(43) LEM-14	(44) LEM-15(45)

DRAWING CHANGE REQD: ✓ REVISE DWG ☐ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

APPROVED BY: VP
DATE: 9/23/66
V.D.I.

SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENG'G	PROJ ENGRG	GOVT
		—	AW		PMC WB	AC
		—	9.?		10-6-66	10-3-66

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LE0280
EO NO.: 295

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO 280 PL 35

01 NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23266	LEM-15(45)	4
		LEM-14(44)	
		LEM-13(43)	
		LEM-12(42)	
		LEM-11(41)	
		LEM-10(40)	
		LEM-9(39)	
		LEM-8(38)	
		LEM-7(37)	
		LEM-6(36)	
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
		LEM-1(31)	
		LTA-8(18)	
LEM	LDW280-23266	LTA-3(13)	4
PART NO. LDW280-10812-1		GAEC SCH NO. 31-1	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -1

GRUMMAN REL INFO A

PRIM NO. LE(001)

215 MP-A 8-31-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY		RCS	
LAYOUT BY	T. MASSEY 1-31-66	RELIABILITY	
CHECKED BY			
GR LEADER	R. PHILLIPS 2-26-66		
VEH DES INT	W. BISCHOFF 2-26		
STRUCTURE	FEB 3-1	PROJ ENGR	J. ALBER 3-15-66
STRUCTURE	HILDERMAN 3-1	REL GROUP	A. CARAMANICA
WEIGHTS	D. ROBESCH 3-3		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP
ASCENT STAGE-MID SECT-THRUSTER CLUSTER
PROPELLANT LINE SUPPORT

SIZE B | CODE IDENT NO. 26512 | LDW280-10812 | A

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 9-64

SUPERSEDES LDW280-10812 NO CHANGE 8-8-66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE LAST REV NO CHANGE SH 1.00 OF 4 WAS 1 OF 1. LOFTED DWG WAS DIMENSIONED	E.SICK		8-8-66			
A	1	1.00, 1.10 & 3.00						EOA1	IN F/D REMOVED (1) HOLE FROM -1	LTA-3 & 8 LEM-1 THRU-6	✓		ESICK 8-8-66		
	2	1.00 1.10							IN MOD BLK, ADDED LEM-7 THRU LEM-15 EFF, TO -1 (N/A LDW280-23266)	NOTED	NOT	REQD	HERB. SCHWETER 8-25-66 RMS		

CHG APPROVED	LTR	GROUP LDR	VEHDES INT	STRUCTURE	STRUCTURE	WEIGHTS	PROJECT	RELEASE				
	A			Eb 9/29								

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10812	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10812-1	E	CLIP	AL ALLOY SH	QQ-A-250/4	2024-T3	.032×3⅝×4½	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10812	A

SCALE NONE

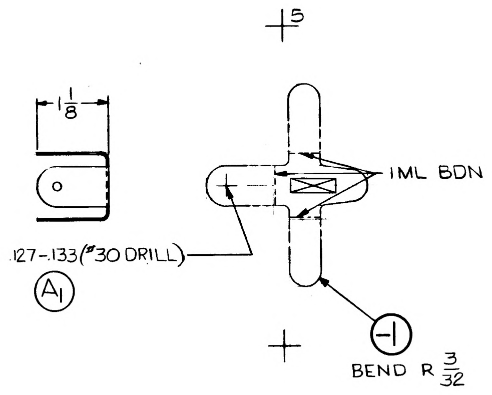
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTE
1. NO TOOLING HOLES PERMITTED IN PART.



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY	✓
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	✓

LDW280-10812 A

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
LEM	SIZE C	CODE IDENT NO. 26512	LDW280-10812	A
MODEL OR END ITEM	SCALE FULL			SHEET 3.00

FOR PHOTO REPRODUCTION

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	APPD
											REWORK	SCRAP			
A	1	1,1.10,2&3							RETRACED NO CHANGE LAST REVISION NO CHANGE. SH. 1.00 OF 4 WAS SH 1 OF1 ADDED SH 1.10, 2.00 & 3.00	LTA-3,-8 LEM-1 THRU-6	NOT	REQD	JAEGGI 5-12-66		5-21-66
	2								ON -1 & -2 REMOVED 23/32 DIM.						

FOR CONTINUATION OF REVISIONS SEE SHEET ________

ENG 77.3 5-66

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10813	A
SCALE NONE			SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10813-2	E	SADDLE	AL ALY SH	QQ-A-362	ALCLAD 2024-T3	.050X3 1/8X3 3/8	88	NONE	3B
		LDW280-10813-1	E	SADDLE	AL ALY SH	QQ-A-362	ALCLAD 2024-T3	.050X3 1/8X3 3/8	88	NONE	3B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

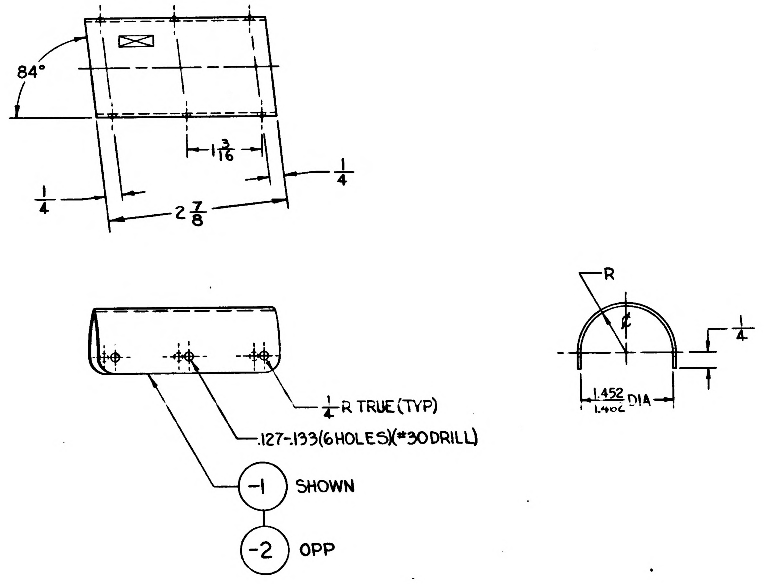
SIZE B | CODE IDENT NO. 26512 | LDW280-10813 | A

SCALE NONE | SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER ~~AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.~~	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES ~~.005-.015~~	√
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	C	26512	LDW280-10813	A
	SCALE FULL		SHEET 3.00	

LDW280-10813 A

NAS 9-1100

01

23

ENG 33.2 REV 3-65

*

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280
EO NO. 295
CONTROL INFO NO. LDW280 A 0657

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS* THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10789	A3	SEE DRAWING
-10790	B1	
H 10792	C1	
-10796	A1	
-10798	B1	
-10800	B2	
H 10801	A1	
H 10802	B1	
H 10804	B1	
-10806	C1	
-10808	A1	
P 10809	B2	
-10811	B2	
-10813	B1	
-10814	B1	
-10815	A4	
-10817	A1	
-10838	B1	
-10846	C1	
-10927	B1	
-10934	A1	
-10953	B1	
-10954	A1	
-10955	A1	
-10961	A3	
P 10966	A4	
-10970	A1	
-10973	A1	
-10974	A1	
-10976	A1	
-10977	A1	
-10979	A1	
LDW280-10980	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE: C
LE 108

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM-9(39)
LEM		LEM-10(40) LEM-11(41)	LEM-12(42)
LEM		LEM-13(43) LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD: ✓ REVISE DWG ☐ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D

APPROVED BY: WP
DATE: 9/13/66
V.L. — SUPPORT — RELIAB. GROUP — GROUP LEADER — STRESS GROUP: AW 9.29 — LIAISON ENG — PROJ ENGRG: RMC 10-6-66 — GOVT: AC 10-3-66

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO.: LE0280

EO NO.: 295

ISSUED BY: L. DETURRIS 7-18-66 X 1441 SECTION: VEHICLE DESIGN INT. GROUP NO. 280 PL 35

LDW280-10814 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23263	LEM-6(36)	1 EA
LEM	LDW280-23263	LEM-5(35)	1 EA
LEM	LDW280-23263	LEM-4(34)	1 EA
LEM	LDW280-23263	LEM-3(33)	1 EA
LEM	LDW280-23263	LEM-2(32)	1 EA
LEM	LDW280-23263	LEM-1(31)	1 EA
LEM	LDW280-23263	LTA-8(18)	1 EA
LEM	LDW280-23263	LTA-3(13)	1 EA
PART NO. LDW 280-10814 -1 & -2		GAEC SCH NO. 31-1	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1:00	1.10	2:00	3:00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO	
LAST DASH NO. USED	-2	PRIM NO. 215	LE(001) MP12A

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.030 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 LINE ITEM 1 DOCUMENTATION TYPE II

DRAWN BY		RELIABILITY	
LAYOUT BY	T. MASSEY 2/9/66		
CHECKED BY			
GR. LEADER	PHILLIPS 2/19/66		
VEH. DES. INT.	BISCHOFF 2/26/66	RCS	R. HAGERMAN 3/14/66
STRUCTURES	FEB BW 3/1/66	PROJ ENGR	J. ALBER RMC 3/14/66
STRUCTURES	HILDERMAN 3/1/66	REL GROUP	BOTTI 3/16/66
WEIGHTS	ROBESCH DJL 3/3/66		

R
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SADDLE
ASCENT STAGE~MIDSECT~THRUSTER CLUSTER PROPELLANT LINE SUPPORT

SIZE B CODE IDENT NO. 26512 LDW280-10814 A
SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-10814 "NO CHANGE 3/16/66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
A	1	1,1.10,2&3							RETRACED NO CHANGE LAST REVISION NO CHANGE. SH. 1 OF 4 WAS 1 OF 1. REMOVED NOTES 1,2&3.	LTA-3-8 LEM-1 THRU-6	NOT	REQD	JAEG31 5-12-66		5-31-66
	2	1.10&3							ON -1&-2, REMOVED 23/32 DIM. ®						

FOR CONTINUATION OF REVISIONS SEE SHEET ________

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10814	A
SCALE NONE		SHEET 1.10	

ENG 77.3 5-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10814-2	E	SADDLE	AL ALY SH	QQ-A-362	ALCLAD 2024-T3	.050×3 1/8×3 3/8	NONE	88	
								LDW280-10814-1	E	SADDLE	AL ALY SH	QQ-A-362	ALCLAD 2024-T3	.050×3 1/8×3 3/8	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10814	A

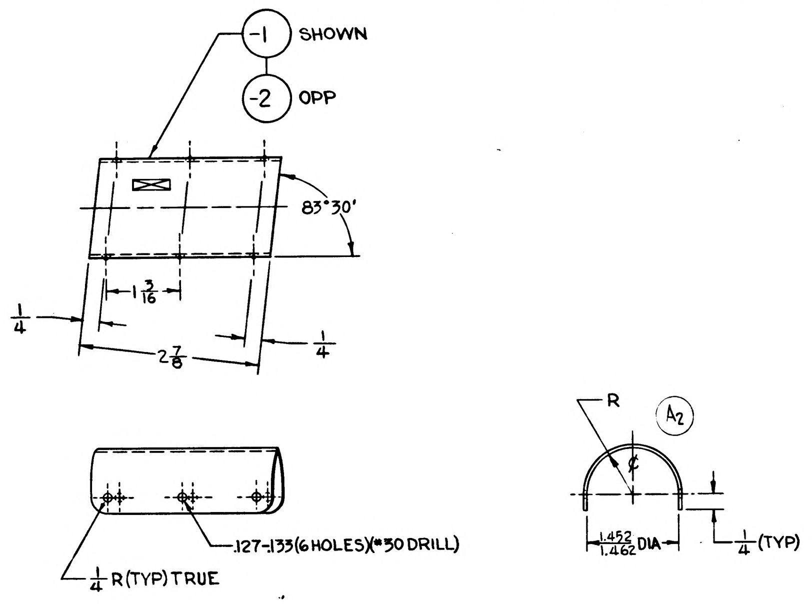
SCALE NONE SHEET 2:00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
~~1. BREAK ALL SHARP EDGES.~~
~~2. LDW280-10814-1 (SHOWN)~~
~~LDW280-10814-2 (OPPOSITE)~~
~~3. RUBBER STAMP PART NUMBER.~~



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBERSTAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES ~~.005-.008~~	✓
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

LDW280-10814 A

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
LEM	SIZE C	CODE IDENT NO. 26512	LDW280-10814	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

01

NAS 9-1100

23 * **GRUMMAN AIRCRAFT ENGINEERING CORP.**
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.2 REV 2-65

DWG NO LEO280 | EO NO 295
CONTROL INFO NO. LDW28CA 0657

* TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM 10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4 34.

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10789	A3	SEE DRAWING
-10790	B1	
H 10792	C1	
-10796	A1	
-10798	B1	
-10800	B2	
H 10801	A1	
H 10802	B1	
H 10804	B1	
-10806	C1	
-10808	A1	
P 10809	B2	
-10811	B2	
-10813	B1	
-10814	B1	
-10815	A4	
-10817	A1	
-10838	B1	
-10846	C1	
-10927	B1	
-10934	A1	
-10953	B1	
-10954	A1	
-10955	A1	
-10961	A3	
P 10966	A4	
-10970	A1	
-10973	A1	
-10974	A1	
-10976	A1	
-10977	A1	
-10979	A1	
LDW280-10980	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ		CL III ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC C EO RELEASE: LE 10-8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM 8(38) LEM 9(39)	
LEM		LEM-10(40) LEM-11(41) LEM 12(42)	
LEM		LEM-13(43) LEM-14(44) LEM-15(45)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO
DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

APPROVED BY				—	AW		RMC	AC
DATE	9/23/66			—	9.21		10-6-66	10-3-66
	VD1	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO: LEO280
EO NO: 295

ISSUED BY L. DE TURRIS 7-18-66 X 441 SECTION VEHICLE DESIGN INT. GROUP NO 280 PL 35

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23074	LEM-6(36)	1
	LDW280-23074	LEM-5(35)	1
↕	LDW280-23074	LEM-4(34)	1
	LDW280-53074	LEM-3(33)	1
LEM	LDW280-23074	LTA-3(13)	1
PART NO. LDW280-10815-13		GAEC SCH NO. 3/-4	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23074	LEM-6(36)	2
	LDW280-23074	LEM-5(35)	2
↕	LDW280-23074	LEM-4(34)	2
	LDW280-53074	LEM-3(33)	2
LEM	LDW280-23074	LTA-3(13)	2
PART NO. LDW280-10815-11		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -13

GRUMMAN REL INFO			
PRIM NO.	VE(001)		
215	MP12		RS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	PALERMO 3-1-66	RELIABILITY	
LAYOUT BY	J. CALANDRA		
CHECKED BY	WCG 3/3/66		
GR LEADER	J. Pusateri 3/7/66		
VEH DES INT	3/10		
STRUCTURES	3/11	PROJ ENGR	3-17-66
STRUCTURES	Hilderman 3-14	REL GROUP	Butt, 3-19-66
WEIGHTS	3-17		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

PLATE
ASCENT STAGE - CABIN SECTION
+Z 33.118 & +Z 42.437

SIZE B
CODE IDENT NO. 26512
LDW280-10815
SCALE NONE
SHEET 1.00 OF 3

ENG 77.1 9-64

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10815-13	E	PLATE	AL ALLOY SH	QQ-A-283	7075-T6	.063 x 1 1/2 x 3 5/8	NONE	88	4B
		LDW280-10815-11	E	PLATE	AL. ALLOY SH.	QQ-A-283	7075-T6	.063 x 1 5/8 x 4	NONE	88	4C

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B

CODE IDENT NO. 26512

LDW280-10815

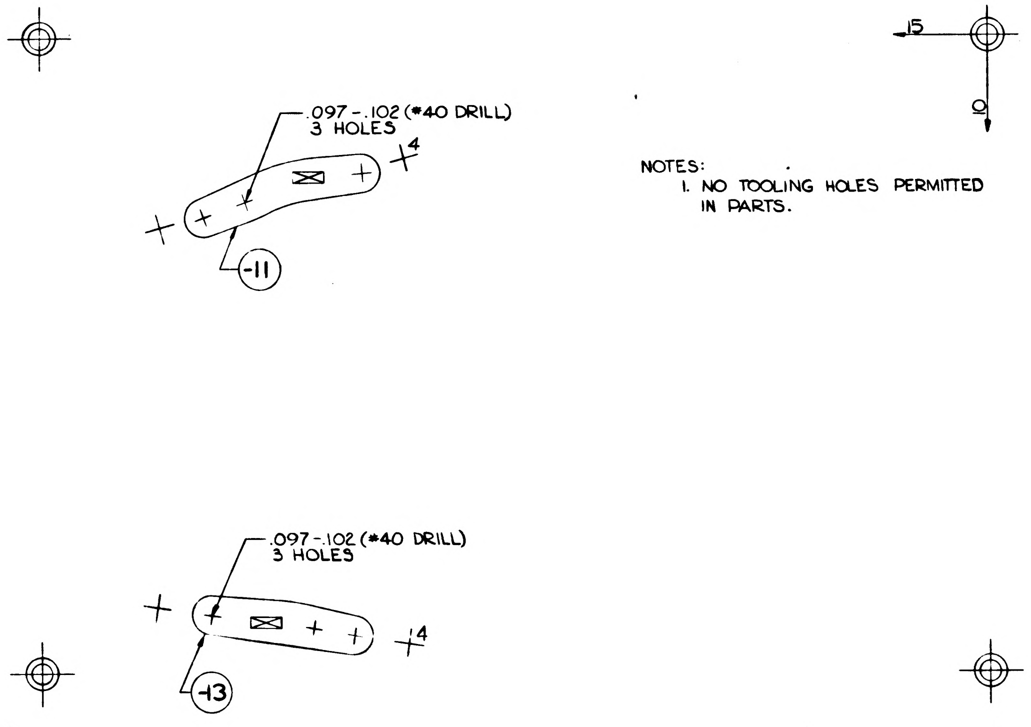
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH. ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LEM	C	26512	LDW280-10815
SCALE FULL			SHEET 3.00

FOR PHOTO REPRODUCTION

LDW280-10815

LDW280-10815

01 NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 100
CONTROL INFO NO. LDW280-6210

IN MODEL BLOCK, FOR LEM 3 CHANGE N/A FROM LDW280-23074 TO LDW280-53074

PART NUMBER	DASH NO.	CHANGE NO.	TITLE
LDW280-10233	-17¢-18	C1	ANGLE A/S CABIN FRAME INSTL. Z51.687
-10245	-17¢-19	C1	ANGLE A/S CABIN WINDOW
-10310	-15	C1	CHANNEL A/S CABIN WINDOW
-10492	-15,-16,-17,-19,-21	B2	FRAME A/S Z51.687
-10493	-19,-20,-21	B2	" " "
-10493	-23,-25,-27		" " "
-10499	-11,-21,-23,-25,-27	B2	" " Z42.437
-10500	-17,-18,-19	B1	" " "
-10500	-21,-23,-24		" " "
-10501	-17,-19,-22,-23	B2	FRAME A/S CABIN Z33.187
-10502	-20,-22,-25	B2	FRAME A/S C.BIN Z33.187
-10503	-19,-21,-25	B2	" " " Z58.00
-10534	-13,-14,-15,-16	B3	FRAME A/S CABIN Z58.00
-10542	-13,-14	B1	STRAP A/S CABIN Z51.68
-10543	-11,-12,-13,-14	A1	" " " Z58.0
-10572	-11 THRU -16	B1	CLIP A/S CABIN X265.80
LDW280-10815	-11,-13	A1	STRAP A/S CABIN IMU BEAM
LDW280M10535	-1,-2,-3,-4,	B1	FITTING A/S CABIN Z42.43
M10540	-3,-4	B4	CLIP A/S CABIN STA. 51.687 X280.00
M10632	-1,-2,-3,-4	A2	FITTING A/S CABIN Z51.687 X252.5
LDW280M10507	-1,-2	B1	FITTING " " Z53 Y22

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: MISSION PROGRAMMER REPLACED THERMAL GARMENT ON L.H. LEM 3 ONLY

DESCRIPTION OF EO: FOR LEM 3 CHANGE N/A

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM 3 (33)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK / SCRAP
✓		NOT REQ

APPROVED BY			RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
DATE	4/22	4-27		—			5-2	5-4-66
	VDI	~~SUPPORT~~ WTJ		—				

GAEC EO RELEASE: MPIO

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	NOTED	LEO 280	100

ISSUED BY P. ABRAMS X1441 3/9/66 SECTION VD1 GROUP NO. 335 PL 35

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 102
CONTROL INFO NO. LDW 280 -6211

IN M/B, FOR LEM 4, 5, & 6 CHANGE I/A TO LDW 280-54074 WAS LDW280-23074

PART NUMBER	DASH NUMBER	*CHANGE NO.	TITLE
ⓒ LDW280-10233	-17, -18	C 2	ANGLE A/S CABIN FRAME INSTL. Z51
LDW 280-10245	-17, -19,	C 2	ANGLE A/S CABIN WINDOW
-10310	-15	C 2	CHANNEL A/S CABIN WINDOW
-10492	-15, -16, -17, -19, -21	B3	FRAME A/S Z 51.687
-10493	-19, -20, -21, -23, -25, -27	B3	" " "
-10499	-11, -21, -23, -25, -27	B3	" " Z 42.437
ⓒ -10500	-17, -18, -19, -21, -23, -24	B 2	" " Z 42.437
ⓒ -10501	-17, -19, -21, -22, -23	B3	" " Z 33.187
-10502	-20, -21, -22, -23, -25, -19,	B 3	" " "
-10503	-19, -21, -23, -25	B 3	" " Z 58.00
-10534	-11, -13, -14, -15, -16	B4	" " "
-10542	-13, -14,	B2	STRAP A/S CABIN Z 51.68
-10543	-11, -12, -13, -14	A2	" " " Z 58.0
-10572	-11 THRU -16	B2	CLIP A/S CABIN X265.80
10815	-11 & -13	A2	STRAP A/S CABIN IMU BEAM
LDW280M-10535	-1, -2, -3, -4	B2 *	FITTING A/S CABIN Z 42.43
-M 10540	-3, -4	B5	CLIP A/S CABIN STA. 51.687, X 280.0
M 10632	-1, -2, -3, -4	A3	FITTING A/S CABIN Z 51.687, X252.5
M 10507	-1, -2	B2	FITTING " " Z 58 Y22
M 10819	-1	A1	ANGLE A/S CABIN RELAY SUPPORT
ⓒ M 10821	-1	A1	ANGLE A/S CABIN

ⓒ CHANGE CANCELLED BY LEO 280-171

* CHANGE No. WAS B1 (REF EO B3 ON LDW 280M10535)

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: ALLIGNMENT OPTICAL TELESCOPE ADDED FOR LEM 3, 4, 5, 6,

DESCRIPTION OF EO: FOR - * CHANGED N/A FOR LEM 4, 5, 6 WAS LDW 280-23074

GAEC EO RELEASE: INFO

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM 4 (34)	
		5 (35)	
		6 (36)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		NOT	REQ

			RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY				—				
DATE	4/23	4 27		—			5-2	5-4-66
	VDI	~~SUPPORT~~ WT						

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LEO 280
EO NO.: 102

ISSUED BY P. ABRAMS X1441 4/18/66 SECTION VDI GROUP NO. 335 PL 35

01 NAS 9-1100

23

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

*

DWG NO. LEO280
EO NO. 295
CONTROL INFO NO. LDW280CA0657

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM 10(40), LEM-11(41), LEM-12(42), LEM 13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4 34.

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10789	A3	SEE DRAWING
-10790	B1	
H 10792	C1	
-10796	A1	
-10798	B1	
-10800	B2	
H 10801	A1	
H 10802	B1	
H 10804	B1	
-10806	C1	
-10808	A1	
P 10809	B2	
-10811	B2	
-10813	B1	
-10814	B1	
-10815	A4	
-10817	A1	
-10838	B1	
-10846	C1	
-10927	B1	
-10934	A1	
-10953	B1	
-10954	A1	
-10955	A1	
-10961	A3	
P 10966	A4	
-10970	A1	
-10973	A1	
-10974	A1	
-10976	A1	
-10977	A1	
-10979	A1	
LDW280-10980	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL III ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF. *

GAEC EO RELEASE: C LE 10-8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38) LEM-9(39)	
LEM		LEM-10(40), LEM-11(41), LEM-12(42)	
LEM		LEM-13(43) LEM-14(44) LEM-15(45)	

DRAWING CHANGE REQ'D: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: NOT REQ'D
APPROVED BY: [illegible]
DATE: 9/23/66
V.D.I.
AW 9.29
PMC 10-6-66
AC 10-3-66
PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LEO280
EO NO.: 295

ISSUED BY L. DE TURRIS 7-18-66 X 1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 35

01
NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280H23236	LEM-15(45)	6 EA
		LEM-14(44)	6 EA
		LEM-13(43)	6 EA
		LEM-12(42)	6 EA
		LEM-11(41)	6 EA
		LEM-10(40)	6 EA
		LEM-9(39)	6 EA
		LEM-8(38)	6 EA
		LEM-7(37)	6 EA
		LEM-6(36)	6 EA
		LEM-5(35)	6 EA
		LEM-4(34)	6 EA
		LEM-3(33)	6 EA
		LEM-2(32)	6 EA
		LEM-1(31)	6 EA
		LTA-8(18)	6 EA
LEM	LDW280H23236	LTA-3(13)	6 EA
PART NO. LDW280-10816-13 & -15		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280H23236	LEM-15(45)	3
		LEM-14(44)	3
		LEM-13(43)	3
		LEM-12(42)	3
		LEM-11(41)	3
		LEM-10(40)	3
		LEM-9(39)	3
		LEM-8(38)	3
		LEM-7(37)	3
		LEM-6(36)	3
		LEM-5(35)	3
		LEM-4(34)	3
		LEM-3(33)	3
		LEM-2(32)	3
		LEM-1(31)	3
		LTA-8(18)	3
LEM	LDW280H23236	LTA-3(13)	3
PART NO. LDW280-10816-11		GAEC SCH NO. 3 F2	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A		
LAST DASH NO. USED	-15	PRIM NO. 215	LE(001) MP 7/30/A	RS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY	H. KLONSKY 2-15-66	RELIABILITY	
LAYOUT BY	Bonell 2-23-66		
CHECKED BY	M 2-21-66		
GR LEADER	[illegible] 2-23-66		
VEH DES INT	[illegible] 3/2/66		
STRUCTURES	[illegible] 3/27	PROJ ENGR	[illegible] 3-28-66
STRUCTURES	[illegible] 3/22	REL GROUP	[illegible] 3-30-66
WEIGHTS	A. Roberts 3-25		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHANNEL
ASCENT STAGE - CABIN FLOOR X215

SIZE	CODE IDENT NO.		
B	26512	LDW280-10816	A
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 9-64

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1, 1.10, 2 & -3						EO A1	IN FLD, FOR -15, DELETED .011, 1/32R, 17/32 DIMS. 11/32 R WAS 3/8 R, 3 1/64 R WAS 3R. IN B/M, FOR -11, .020 THICKNESS WAS .032. SH 1 OF 4 WAS SH 1 OF 3. ADDED SH 1.10.	LTA-3, -8 LEM-1, -2 -3, -4, -5 & -6	✓		6-7-66	☒	☒
	2	1.00 1.10 3.00						EOA2	REVISED TRIM OF -15 & REMOVED DIM. .011, 17/32 & 1/32 R REVISED QTY REQD PER MODULE OF -11: 3 WAS 1, OF -13 & -15: 6 WAS 3				A. BELTRAMI 7-16-66 RS	☒	☒
	3	1.10							REF E.O. A2 REVISED TRIM OF -15 & REMOVED DIM. .011, 17/32 & 1/32 R NOT APPLICABLE PER E.O. A1. QTY REQD PER MODULE OF -13 & -15: 6 WAS 3 SHOULD BE 6 WAS 2.	NOT REQD	NOT	REQD			8-8-66
	4	1.00, 1.10							ADDED LEM-7 THRU -15 EFF., 3 REQD/MOD. ON -11 & 6 REQD/MOD. ON -13 & -15. EG	LEM-7 THRU -15			JAEGGI 7-27-66		

CHG APPROVED	LTR	GROUP LDR	VEH DESINT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY
	A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10816	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10816-15	E	PLATE	AL ALY SH	QQ-A-250/12	BARE 7075 T6	.020 X 1 1/4 X 1 5/8	NONE	NONE	4D
		LDW280-10816-13	E	CHANNEL	AL ALY SH	QQ-A-250/12	BARE 7075 T6	.020 X 3 3/4 X 5 1/8	NONE	NONE	4F
		LDW280-10816-11	E	CHANNEL	AL ALY SH	QQ-A-250/12	BARE 7075-T6	.032 X 2 1/4 X 21	NONE	NONE	6A

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-10816
A
SCALE NONE
SHEET 2.00

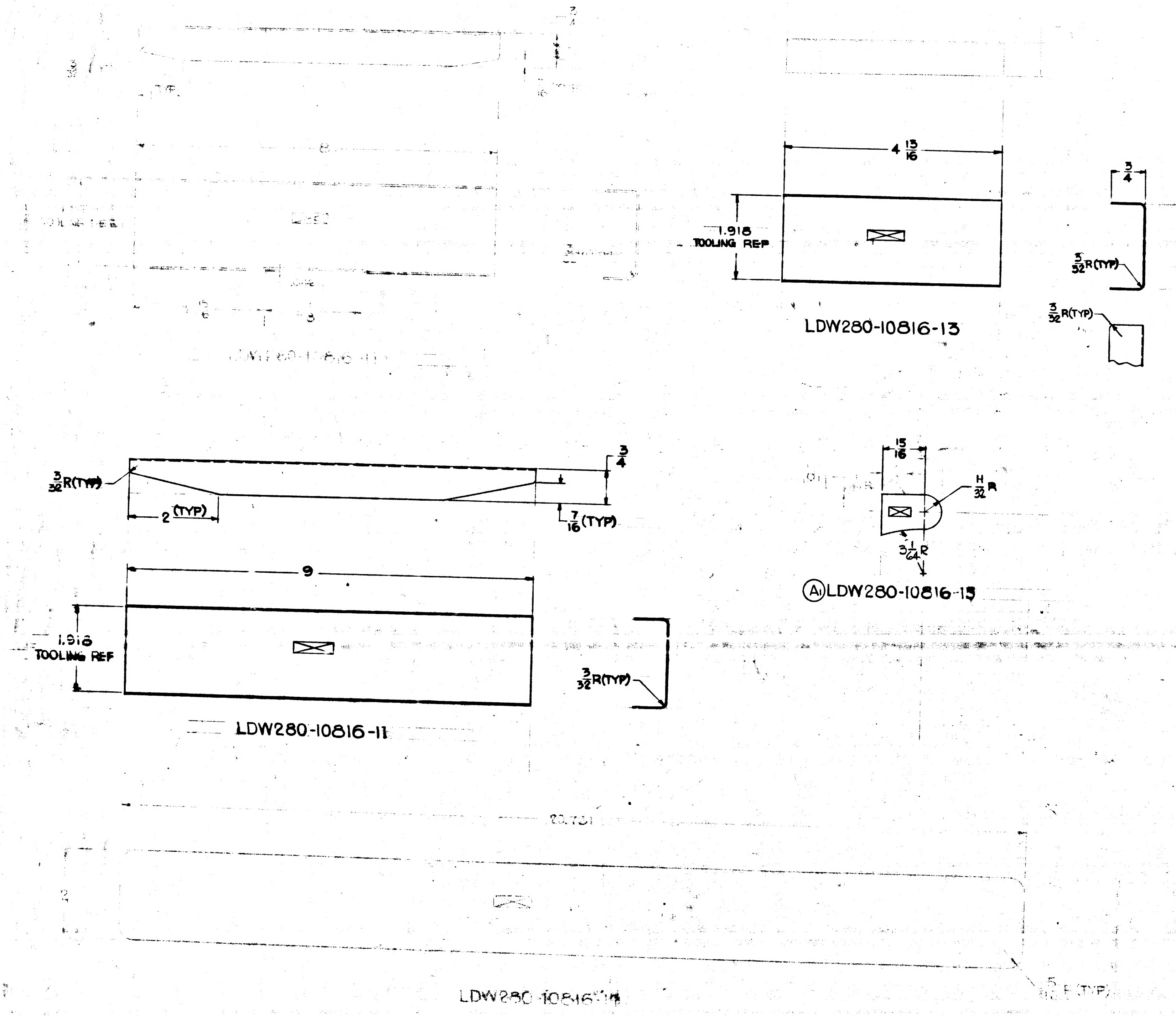
ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. ALL DETAILS ON THIS DRAWING SHALL BE COORDINATED WITH EACH OTHER ¢ WITH LDW280H10622, LDW280-10620 ¢ LDW280-10621. TOOLING TO BE COORDINATED.
3. THIS DRAWING CONTAINS PARTS TO BE BONDED IN A HONEYCOMB ASSEMBLY.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
[redacted] PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ [redacted]	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ƒ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	


4 $\frac{15}{16}$
1.918 TOOLING REF
LDW280-10816-13
$\frac{3}{4}$
$\frac{5}{32}$R(TYP)
$\frac{3}{32}$R(TYP)
$\frac{3}{32}$R(TYP)
$\frac{3}{4}$
2 (TYP)
$\frac{7}{16}$(TYP)
$\frac{15}{16}$
H $\frac{1}{32}$R
$\frac{3}{64}$R
Ⓐ LDW280-10816-15
9
1.918 TOOLING REF
$\frac{3}{32}$R(TYP)
LDW280-10816-11
LDW280-10816-1

LDW280-10816A

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LEM	SIZE F	CODE IDENT NO. 26512	LDW280-10816 A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

NAS 9-1100

01

01 NAS 9-1100

ENG 33.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 1130
CONTROL INFO NO. LDW28035508

TO THE *DASH NUMBERS OF DWGS LISTED ADD END ITEM LDW420-11262 SERIAL NUMBERS 15 & 16

DWG. NO.	TITLE	*DASH NO.	QUANTITY	N/A	E.O. #
LDW280-10788	WEB A/S CABIN FLOOR	-11 & -13	1EA	LDW280H 23234	B5 ✓
		-15	1	LDW280 H 23236	
LDW280-10816	CHANNEL A/S CABIN FLOOR	-13 & -15	2 EA	LDW280H23236	B1 ✓
		-13	1		
LDW280-10927	SKIN A/S CABIN FLOOR	-13, -15 & -17	1EA	LDW280H 23235	B4
		-11 & -19	2 EA		
LDW280M 10714	HOUSING A/S CABIN FLOOR	-5	1	LDW280H 23232	B3
LDW280M10715	HOUSING A/S CABIN FLOOR	-1	1	LDW280H 23233	A3
LDW280M 10722	CHANNEL A/S CABIN FLOOR	-1 & -2	1EA	LDW280H 23235	B5
LDW280 M10723	FITTING A/S CABIN FLOOR	-1	2	LDW280H 23234	B5
LDW280M10724	FITTING A/S CABIN FLOOR	-3	1	LDW280H 23234	B6
LDW280M 10825	CHANNEL A/S CABIN FLOOR	-1	1	LDW280H 23273	C4
LDW280P10966	CHANNEL A/S CABIN	-13	1	LDW280H 23334	A8

THIS IS AN ORIGINAL EO

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD 3357B PKG 1. (5)

REASON FOR EO: FABRICATION OF NON-FLIGHT CREW COMPARTMENT FLOOR

DESCRIPTION OF EO: TO *DASH NO.S ADDED END ITEM LDW420-11262 S/N 15 & 16

GAEC EO RELEASE: JJC 9/27/

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR. UNIT NO.
LM	LDW420-11262	S/N 15 & 16	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: NOT REQD REWORK SCRAP

APPROVED BY									
DATE	9/27/68	9/27/68		9/25/68	9/20/68		9/20/68	9-27-68	
	VDI	F&T GSE	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT	

PRIORITY: C
DRAWING TITLE: SEE ABOVE
DRAWING NO. LEO 280
EO NO. 1130

9-25-68
ISSUED BY DALY X84663 SECTION VDI GROUP NO. 335 PL 25

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 1128
CONTROL INFO NO. LDW28085264

TO THE *DASH NUMBERS OF DWGS LISTED ADD END ITEM LDW420-11262 SERIAL NUMBER 14

DWG#	TITLE	* DASH #	QUANTITY	N/A	E.O. #
LDW280H10801	CORE A/S CABIN FLOOR	-15, -16, -17 & -18	1EA	LDW280H23273	A4
		-11 & -13	1EA	LDW280H23234	
LDW280H10802	CORE A/S CABIN FLOOR	-19 & -21	2EA	LDW280H23233	B2
		-23 & -25	2EA	LDW280H23232	
LDW280H10803	CORE A/S CABIN FLOOR	-27	2	LDW280H54060	B4
		-13, -15 & -21	1EA	LDW280H23234	
		-17, -19, -23 & -25	2EA		
LDW280H10804	CORE A/S CABIN FLOOR	-11, -13 & -19	1EA	LDW280H23236	B2
		-15 & -17	2EA		
LDW280-10816	CHANNEL A/S CABIN FLOOR	-13 & -15	6EA	LDW280H23236	B2
		-11	3		
LDW280-10817	CHANNEL A/S CABIN FLOOR	-11 & -13	2EA	LDW280H54060	A3
LDW280M10825	CHANNEL A/S CABIN FLOOR	-1	1	LDW280H23273	C3
LDW280-10927	SKIN A/S CABIN FLOOR	-13, -15 & -17	1EA	LDW280H23235	B5
		-11 & -19	2EA		
LDW280-10955	PLATE A/S CABIN FLOOR	-13-1	1	LDW280H54060	A5
		-11	1	LDW280H23234	
LDW280P10966	CHANNEL A/S CABIN FLOOR	-13	1	LDW280H23334	A7

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NAS 9-1100

ok.

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 3357B PKG#1

REASON FOR EO: FABRICATION OF NON-FLIGHT CREW COMPARTMENT FLOOR

DESCRIPTION OF EO: TO *DASH #S ADDED END ITEM LDW420-11262 S/N 14

(5)
GAEC EO RELEASE: 9/27

MODEL	EFFECTIVITY: ~~PROCURING ACTIVITY~~ NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LDW420-11262	S/N 14	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK NOT | SCRAP REQ'D

APPROVED BY					CW			
DATE	8/23/68	8/27/68		8/21/68	8/23/68		8/23/68	9-11-68
	VDI	HBT GSE	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C
DRAWING TITLE: SEE ABOVE
DRAWING NO.: LEO 280
EO NO.: 1128

9- -68
ISSUED BY P. WEISSLITZ x86048
SECTION VDI
GROUP NO. 335 PL 25

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NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280
EO NO. 1475
CONTROL INFO NO. LDW280B8049

IN MOD BLOCK
REMOVE LM-15(45) EFF FROM FOLLOWING PARTS:

DWG NO.	DASH NO.	TITLE	NEXT ASSY	QUANT. REQ'D	COMAT	CHANGE EO. №
✓LDW280M10714	-5	HOUSING-BEARING	LDW280H23232	1	M	B4
✓LDW280M10715	-1	HOUSING-BEARING	LDW280H23233	1	M	A4
✓LDW280M10716	-1	BEARING	LDW280H54060	1	M	A3
✓LDW280M10717	-3	PIN	LDW280H54060	1	M	A3
✓LDW280M10719	-3	TRUSS	LDW280H54060	1	M	B5
✓LDW280M10722	-1 & -2	CHANNEL	LDW280H23235	1 EA	M	C1
✓LDW280M10723	-1	FITTING	LDW280H23234	2	M	C1
✓LDW280M10724	-3	FITTING	LDW280H23234	1	M	C1
✓LDW280M10825	-1	CHANNEL	LDW280H23273	1	M	C5
✓LDW280P10966	-13	CHANNEL	LDW280H23334	1	NM	B1
✓LDW280-10620	-11-1	WEB	LDW280H54060	1	M	B6
✓LDW280-10621	-17	WEB	LDW280H54060	1	M	B7
✓LDW280-10788	-11 & -13 -15	WEB	LDW280H23234 LDW280H23236	1 EA 1	M	C1
✓LDW280-10816	-11 -13 & -15	CHANNEL	LDW280H23236	1 2 EA	M	B3
LDW280-10817	-11 & -13	CHANNEL	LDW280H54060	2 EA	M	B1
LDW280-10927	-11 & -19 -13, -15 & -17	SKIN	LDW280H23235	2 EA 1 EA	M	C1
LDW280-10955	-11 -13-1	PLATE	LDW280H23234 LDW280H54060	1 1	M	B1
LDW280-10979	-11	DOUBLER	LDW280H54060	1	M	B1
LDW280-11036	-15 & -17	BUMPER	LDW280H54060	2 EA	M	B3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD3587 PKG12 CCA1821 AMD#1 (5)

REASON FOR EO: PARTS NOT REQD FOR AAP

DESCRIPTION OF EO: (NOTED ABOVE)

GAEC EO RELEASE: 7-9-69; JK 7/10/69

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ / RECORD EO
DISPOSITION OF PARTS: REWORK / SCRAP ✓

	VDI	~~SUPPORT~~ mat.	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY					CW			
DATE	7/7/69	7/3/69		7-2-69	7-8-69		7/8/69	7-10-69

PRIORITY: C
DRAWING TITLE: (NOTED ABOVE)
DRAWING NO.: LEO280-
EO NO.: 1475

7-25-69
ISSUED BY P MARTELLO X86048 SECTION VEH DES INT GROUP NO. 335 PL 25

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LDW420-11262	LDW280H54060	SER#16	2 EA
								LDW420-11262	↑	SER#15	2 EA
								LDW420-11262		SER.#14	2 EA
								LM		LEM-15(45)	2 EA
								↑		THRU	2 EA
										LEM-7(37)	2 EA
										LEM-6(36)	2 EA
								↓		LEM-5(35)	2 EA
								LM	↓	LEM-4(34)	2 EA
								LFM269	LDW280H54060	LEM-3(33)	2 EA
								LM	LDW280H23060	LEM-2(32)	2 EA
								↑	↑	LFM-1(31)	2 EA
								↓	↓	LTA-8(18)	2 EA
								LM	LDW280H23060	LTA-3(13)	2 EA
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW280-10817-11 & -13		GAEC SCH NO. 31-2	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	1.10	3.00				
REV	A			A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A	
		PRIM NO.	JK 601
LAST DASH NO. USED	-13	215	ME-3A 11/16/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	H. KLONSKY 3-9-66	RELIABILITY	
LAYOUT BY	BONELLI		
CHECKED BY	WCG 3-19-66		
GR LEADER	J. Lusatoni 3/23		
VEH DES INT	3/23		
STRUCTURES	3/25	PROJ ENGR	3-31-66
STRUCTURES	Hilderman 3/26	REL GROUP	E. Cassamassi 4-4
WEIGHTS	3-31		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHANNELS
ASCENT STAGE-CABIN FLOOR X215

SIZE B
CODE IDENT NO. 26512
LDW280-10817
A
SCALE NONE
SHEET 1.00 OF 3

ENG 77.1 9-64

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00,1.10						LE0280-295	ADDED LEM-7 THRU -15 EFF. ADDED SH. 1.10	LEM-7 THRU LEM-15	NOT	REQD	L. GAVRIL 11-5-68		OC 11-12
	2	1.00				✓		LE0280-856 LCD 2147 CCA 668 LCD 2011	FOR -11 & -13 N/A LDW280H54060 WAS LDW280H23060	LEM-7 THRU LEM-15					
	3	1.00				✓		LE0280-1128 LCD 3357	TO -11 & -13, ADDED END ITEM LDW420-11262 S/N 14	SER#14					
	4	1.00				✓		LE0280-1131 LCD3357	TO -11 & -13, ADDED END ITEM LDW420-11262 S/N 15 & 16	SER.#15 SER.#16					
	5	1.00				✓		LE0280-1149 LCD3501	FOR -11 & -13, N/A WAS : DW280H23060 FOR LM-3(33)	LEM-3					

FOR CONTINUATION OF REVISIONS SEE SHEET ________

ENG 77.3 5-66

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10817	A
SCALE NONE		SHEET 1.10	

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10817-13	E	CHANNEL	AL ALY SH	QQ-A-283	BARE 7075-T6	NOTE 2 X 2 3/4 X 3 1/8	NONE	NONE	
		LDW280-10817-11	E	CHANNEL	AL ALY SH	QQ-A-283	BARE 7075-T6	NOTE 2 X 2 3/4 X 3 7/8	NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B | CODE IDENT NO. 26512 | LDW280-10817

SCALE NONE | SHEET 2.00

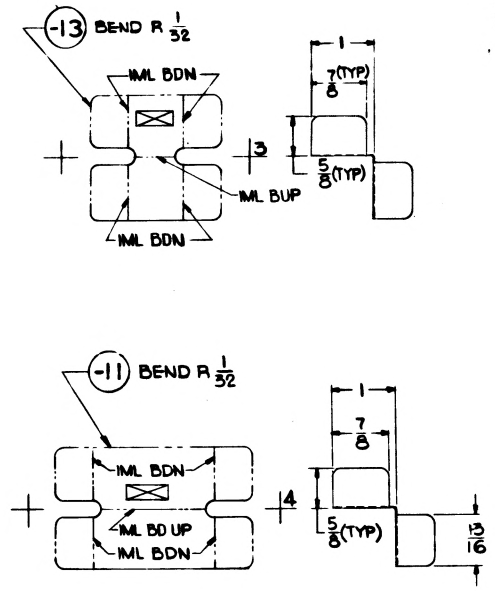
ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. MATERIAL FOR -11 & -13 TO BE .008 THICK, ALTERNATE MATERIAL MAY BE .016 TO BE SIZED TO .008 ±.002.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒	✓
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓



-13 BEND R 1/32
IML BDN
IML BUP
IML BDN
1
7/8 (TYP)
3
5/8 (TYP)
-11 BEND R 1/32
IML BDN
IML BD UP
IML BDN
1
7/8
4
5/8 (TYP)
13/16

01

NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
LEM	SIZE C	CODE IDENT NO. 26512	LDW280-10817	
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

LDW280-10817

LDW280-10817

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280 | EO NO. 1475
CONTROL INFO NO. LDW280B8049

IN MOD BLOCK
REMOVE LM-15(45) EFF FROM FOLLOWING PARTS:

DWG NO.	DASH NO.	TITLE	NEXT ASSY	QUANT. REQD	COMAT	CHANGE EO. Nº
✓ LDW280M10714	-5	HOUSING-BEARING	LDW280H23232	1	M	B4
✓ LDW280M10715	-1	HOUSING-BEARING	LDW280H23233	1	M	A4
✓ LDW280M10716	-1	BEARING	LDW280H54060	1	M	A3
✓ LDW280M10717	-3	PIN	LDW280H54060	1	M	A3
✓ LDW280M10719	-3	TRUSS	LDW280H54060	1	M	B5
✓ LDW280M10722	-1 & -2	CHANNEL	LDW280H23235	1 EA	M	C1
✓ LDW280M10723	-1	FITTING	LDW280H23234	2	M	C1
✓ LDW280M10724	-3	FITTING	LDW280H23234	1	M	C1
✓ LDW280M10825	-1	CHANNEL	LDW280H23273	1	M	C5
✓ LDW280P10966	-13	CHANNEL	LDW280H23334	1	NM	B1
✓ LDW280-10620	-11-1	WEB	LDW280H54060	1	M	B6
✓ LDW280-10621	-17	WEB	LDW280H54060	1	M	B7
✓ LDW280-10788	-11 & -13	WEB	LDW280H23234	1 EA	M	C1
	-15		LDW280H23236	1		
✓ LDW280-10816	-11	CHANNEL	LDW280H23236	1	M	B3
	-13 & -15			2 EA		
✓ LDW280-10817	-11 & -13	CHANNEL	LDW280H54060	2 EA	M	B1
LDW280-10927	-11 & -19	SKIN	LDW280H23235	2 EA	M	C1
	-13, -15 & -17			1 EA		
LDW280-10955	-11	PLATE	LDW280H23234	1	M	B1
	-13-1		LDW280H54060	1		
LDW280-10979	-11	DOUBLER	LDW280H54060	1	M	B1
LDW280-11036	-15 & -17	BUMPER	LDW280H54060	2 EA	M	B3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD3587 PKG12 CCA1821 AMD#1	(5)

REASON FOR EO
PARTS NOT REQD FOR AAP

DESCRIPTION OF EO
(NOTED ABOVE)

GAEC EO RELEASE
7-9-69
JK 7/10/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			✓

	VDI	~~SUPPORT~~ MAT.	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY				FDN/JW	CW		Gal	Both
DATE	7/1/69	7/1/69		7-2-69	7-8-69		7/8/69	7-10-69

PRIORITY C
DRAWING TITLE (NOTED ABOVE)
DRAWING NO. LEO280-
EO NO. 1475

7-25-69
ISSUED BY P MARTELLO X86048 SECTION VEH DES INT GROUP NO. 335 PL 25

01
NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10818-12	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.040 x 1 7/8 x 4 3/8	T6	88	
								LDW280-10818-11	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.040 x 1 7/8 x 4 3/8	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030
						T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-10818
A

SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

LDW280-10818 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-54020	LEM-15(45)	3EA
LEM		LEM-14(44)	3EA
LEM		LEM-13(43)	3EA
LEM		LEM-12(42)	3EA
LEM		LEM-11(41)	3EA
LEM		LEM-10(40)	3EA
LEM		LEM-9(39)	3EA
LEM		LEM-8(38)	3EA
LEM		LEM-7(37)	3EA
LEM		LEM-6(36)	3EA
		LEM-5(35)	3EA
	LDW280-54020	LEM-4(34)	3EA
	LDW280-53020	LEM-3(33)	3EA
LEM	LDW280-13020	LIA-3(13)	3EA

PART NO. LDW280-10818-11,-12
GAEC SCH NO. 32-4

MODEL OR END ITEM | NEXT ASSY | MODULE OR SER NO. | REQD PER MODULE OR END ITEM
PART NO. | GAEC SCH NO.

MODEL OR END ITEM | NEXT ASSY | MODULE OR SER NO. | REQD PER MODULE OR END ITEM
PART NO. | GAEC SCH NO.

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	B	B	A	B
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED
LAST DASH NO. USED -12

GRUMMAN REL^C INFO B
PRIM NO. LE(001)
215 MP-B 8-29-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	G.PELLEGRINO 3/4/66	RELIABILITY	
LAYOUT BY	G.PELLEGRINO 3/4/66		
CHECKED BY			
GR LEADER	W.PHILLIPS 3/9/66		
VEH-DES INT	W.BISCHOFF 3/10/66		
STRUCTURES	FEB BW 3/11/66	PROJ ENGR	C.W. RATKHE 3/19/66
STRUCTURES	HILDERMAN 3/11/66	REL GROUP	BOTTI 3/22/66
WEIGHTS	D.ROBESCH DJL 3/14/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE-MID SECTION X294 DECK STIFFENER
REINFORCEMENT Z0, ±10.250

SIZE B | CODE IDENT NO. 26512 | LDW280-10818 | B
SCALE NONE | SHEET 1.00 OF 4

▲THIS DWG SUPERSEDES LDW280-10818 "NO CHANGE" 3-22-66

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
A	1	1.00, 1.10, 2.00, 3.00							Ⓡ RETRACED NO CHANGE LAST REVISION NO CHANGE. SH. 1 OF 4 WAS 1 OF 1. LOFTED DWG WAS DIMENSIONED. (ADDED NOTE 1). WCG	NOT REQD	NOT	REQD	JAEGGI 5-23-66		
B	1	1.00 1.10 3.00						E.O. B1	IN FLD. DWG. FOR -11 & -12, REVISED TRIM LINE. IN APPL. BLK. ADDED LEM-7 THRU LEM-15 EFF.	LEM-7 THRU-15	✓		BRODA 8-17-66		
	2	1.10							Ⓡ REF E.O. B1 EFFECTIVITY SHOULD BE LTA-3 & LEM-3 THRU-15.	NOT REQ'D	NOT	REQ'D			

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

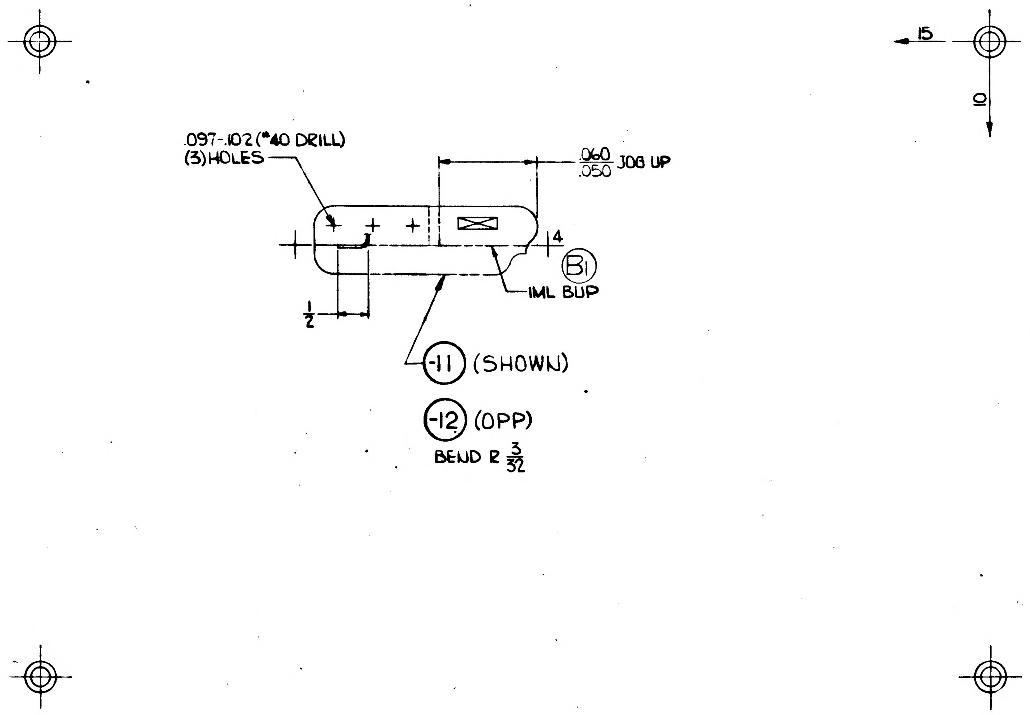
SIZE B	CODE IDENT NO. 26512	LDW280-10818	B
SCALE NONE		SHEET 1.10	

ENG 77.3 5-66

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.



MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ƒ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

LEM	SIZE C	CODE IDENT NO. 26512	LDW280-10818	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

LDW280-10818 B

01 NAS 9-1100

LDW280-10819 A

LEM	LDW280-23019	LTA-3(13)	1
PART NO. LDW280-10819-15		MODULE NO.	REQD PER MODULE

LEM	LDW280-53019	LEM-3(33)	1EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10819-17		GAEC SCH NO.	

LEM	LDW280-53019	LEM-3(33)	1EA
LEM	LDW280-23019	LTA-3(13)	1EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW 280-10819-13-16		GAEC SCH NO.	

LEM	LDW280-53019	LEM-3(33	2
LEM	LDW280-23019	LTA-3(13)	2
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10819-11		GAEC SCH NO. 32-4	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	–	GRUMMAN RELINFO A		
LAST DASH NO. USED	17	PRIM NO.	LE(001)	
		215	MP12A	8.16.6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	
A	

CONTRACT NO. NAS 9-1100 LINE ITEM #1 DOCUMENTATION TYPE II

DRAWN BY	ROCKLEIN 1/31/66	RELIABILITY	
LAYOUT BY	ROCKLEIN 1/31/66		
CHECKED BY			
GR. LEADER	R/PHILLIPS 2/3/66		
VEH. DES INT.	W.BISCHOFF 2/4/66		
STRUCTURES	FEB	PROJ ENGR	W. CRAFT 2/17/66
STRUCTURES	HILDERMAN 2/4/66	REL GROUP	LIPPONCOTT 2/19/66
WEIGHTS	D.ROBESCH 2/3/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

STRAP-ASCENT STAGE, MID SECTION-Z27 BULKHEAD REWORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10819	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-10819 "NO CHANGE" 2/19/66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
A		1.00,1.10, 2.00,3.00							RETRACED NO CHANGE LAST REVISION NO CHANGE. SH 1OF4 WAS 1OF1. LOFTED DWG WAS DIMENSIONED. (ADDED NOTE 1).	NOT REQD	NOT	REQD	WCG JAEGGI 5-19-66		
	1							EO A1	RESTRICTED EFFECTIVITY OF -15 TO LTA-3(13), LEM-4(34), LEM-5(35), AND LEM-6(36). CREATED -17 FOR LEM-3(33) BY REWORKING -15.	LTA-3, LEM -3,-4,-5,-6	-15				
	2	1.00,1.10						®	FOR -11,-13,-15 & -16 REMOVED LEM-4-5 & -6 EFF. WCG	LEM-4-5-6		-11-13-15-16	JAEGGI 5-27-66		

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10819	A
SCALE NONE			SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10819-17	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.080×2½×39⅝	T6	88	
		LDW280-10819-16	E	ANGLE		QQ-A-250/12	7075	.080×2½×41⅝	T6	88	
		-15	E	ANGLE		QQ-A-250/12	7075	.080×2½×41⅝	T6	88	
		-13	E	STRAP		MIL-A-8920	2219-T81	.040×2½×32¼	NONE	88	
		LDW280-10819-11	E	STRAP	AL ALLOY SH	MIL-A-8920	2219-T81	.040×3¼×25¼	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B | CODE IDENT NO. 26512 | LDW280-10819 | A

SCALE NONE | SHEET 2:00

ENG 77.2 7-66

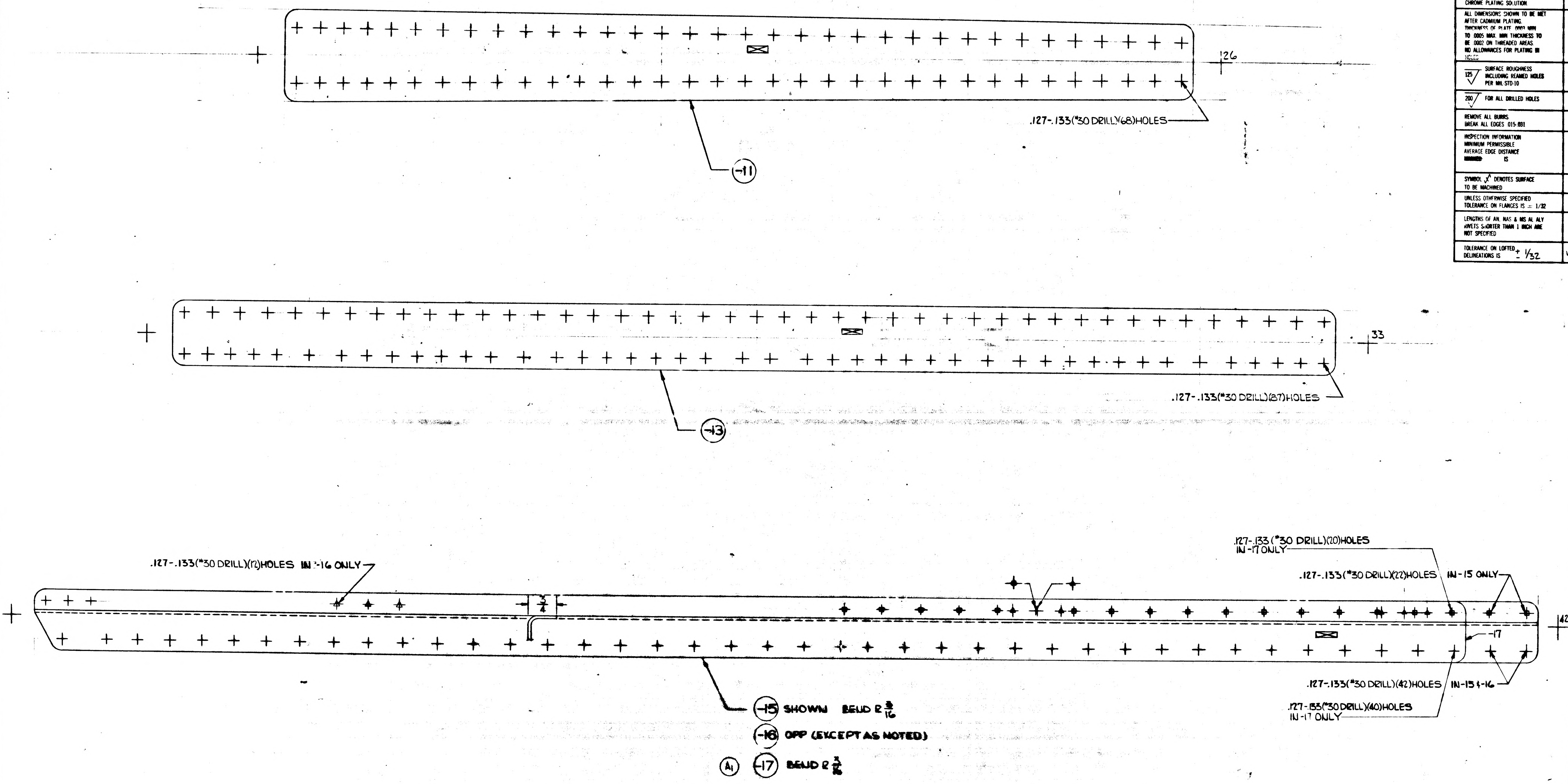
01

NAS 9-1100

SYMBOL LEGEND

SYMBOLS ARE FOR LOCATION AND QUANTITY ONLY.

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.


126
.127-.133(#30 DRILL)(68)HOLES
-11
33
.127-.133(#30 DRILL)(87)HOLES
-13
.127-.133(#30 DRILL)(12)HOLES IN -16 ONLY
3/4
.127-.133(#30 DRILL)(20)HOLES IN -17 ONLY
.127-.133(#30 DRILL)(22)HOLES IN -15 ONLY
42
-17
.127-.133(#30 DRILL)(42)HOLES IN -15 & -16
.127-.133(#30 DRILL)(40)HOLES IN -17 ONLY
-15 SHOWN BEND R 3/16
-16 OPP (EXCEPT AS NOTED)
A1
-17 BEND R 3/16

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .000 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE ~~MARKED~~ IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

LEM	SIZE E	CODE IDENT NO. 26512	LDW280-10819	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

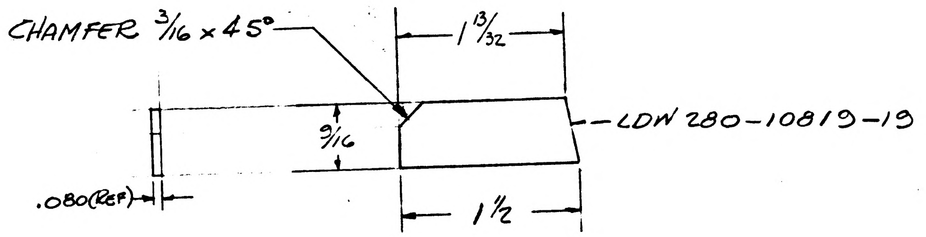
LDW280-10819 A

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10819
EO NO. B1
CONTROL INFO NO. LDW 280A4443

ADD -19 . SHT. 2.00 & 3.00



-19 . SHIM - AL.ALLOY SHT. QQ-A-250/4 2024-T3
.080 .. 3/4 x 1 5/8 NO HT. FIN 88 1 $T.E

EFF LM-3(33) ONLY N/A LDW 280-53128

1 REQ/MODULE

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐ 3

REASON FOR EO: TO CREATE -19 SHIM REQ'D FOR CABIN PRESS SWITCH MTG REDESIGN ON LDW280-53128

DESCRIPTION OF EO: ADDED -19

① GAEC C EO RELEASE: FR 1/7/7

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3(33)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
✓		NOT REQ.		DATE	12/19/66			—	1/4/67		1-7-67	1-7-67
REVISE DWG	RECORD EO	REWORK	SCRAP	5	VD1	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C
DRAWING TITLE: STRAP A/S. M/S - Z 27 BLKHD. REWORK
DRAWING NO.: LDW 280-10819
EO NO.: B1

ISSUED BY J. J. LEONARD x1441 12/15/66 SECTION VD1 GROUP NO. 335 PL 35

01 NAS 9-1100

LDW280-10820 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-11141	TEST SPECIMEN	5
LEM	LDW280-53018	I FM-3(33)	1
LEM	LDW280-23018	LTA-3(13)	1
PART NO. LDW280-10820-11		GAEC SCH NO. 31-1	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED

LAST DASH NO. USED -11

GRUMMAN REL^c INFO

PRIM NO.	LE(001)	
215	MP-A	8-26-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.010 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	J. GRANDY	RELIABILITY	
LAYOUT BY	J. GRANDY		
CHECKED BY			
GR LEADER	B. PHILLIPS 2/2/66		
VEH DES INT	W. BISCHOFF 2/7/66		
STRUCTURES	F.B. 2/7/66	PROJ ENGR	W. CRAFT 2/8/66
STRUCTURES	R. HILDERMAN 2/7/66	REL GROUP	D. MARTIN 2/8/66
WEIGHTS	D. ROBESCH 2/3		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

PLATE
ASCENT STAGE~MID SECT. +Z27.00

SIZE	CODE IDENT NO.		
B	26512	LDW280-10820	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-10820 "NO CHANGE" 2-2-66

01

NAS 9 - 1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
									RETRACED~NO CHANGE~LAST REV NO CHANGE SHEET 1.00 OF 4 WAS SH 1 OF 1 ADDED SH 1.10, 2.00 & 3.00	HERB. SCHWETER 8-12-66					
A	1	1.00						EO A1	IN M/B REMOVED EFF. FOR LEM-1, -5 & -6 ON -1 ADDED EFF. FOR TEST SPECIMEN.	NOTED	NOT	REQD	HERB SCHWETER 8-12-66		
	2								REF EO A1, -11 WAS -1. ®						

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10820	A
SCALE NONE			SHEET 1.10

ENG 77.3 5-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10820-11	E	PLATE	AL ALY SH	MIL-A-8920	2219-T87	.071×2×2 SEE NOTE 2	FP	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						FP	PENETRANT INSP	MIL-I-6866

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10820	A

SCALE NONE

SHEET 2.06

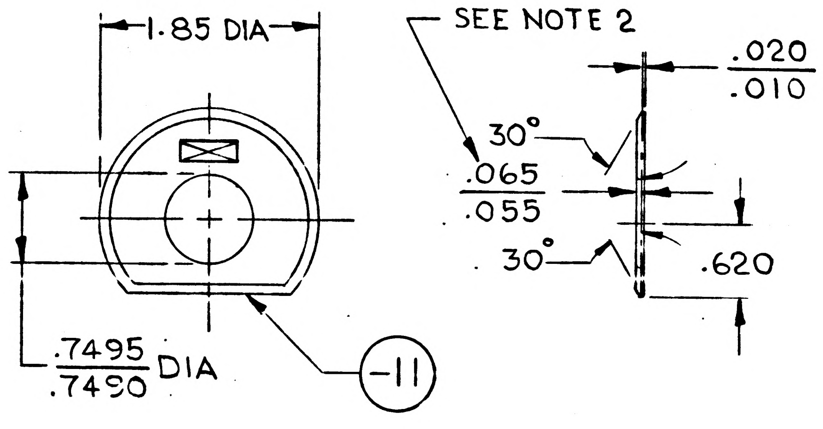
ENG 77.2 7-65

01

NAS 9-1100

NOTES:

1. THIS PART MAY BE SIZED BY CHEM MILLING.



MODEL: LEM

ENG 73.11 10-64

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

- RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ✓
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES. ✓
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- 125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 ✓
- 200 FOR ALL DRILLED HOLES
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- FILLET AND INSIDE CORNER RADII TOLERANCES
  - .016R TO .062R ± .010
  - .063R TO .250R ± .015
  - OVER .250R ± .030 ✓
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 ✓
- SYMBOL √ DENOTES SURFACE TO BE MACHINED
- TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10820	A
SCALE FULL		SHEET 3.00	

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW280-10820 EO NO. B1
CONTROL INFO NO. LEM-3-377B

IN MODEL BLOCK FOR -1 QUANTITY REQD/MOD 10 (WAS) 5
FOR NEXT ASSY LDW280-11141 ONLY.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO	DESCRIPTION OF EO	① GAEC EO RELEASE
TO HAVE DETAILS AGREE WITH N/A.	FOR -1 QUANTITY REQD/MOD 10 (WAS) 5 FOR N/A LDW280-11141	VE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM			
		TEST SPECIMEN	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY								
				—	BM			
DATE	9/22	104		—	8-25-66	8-25-66	8-30-66	8-25-66
8/25/66	VD1	~~SUPPORT~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C3	PLATE A/S ~ MID SECT. +Z 27.00	LDW280-10820	B1

ISSUED BY LIAISON ~ J. KOSLOSKI x2151 SECTION V.D.1 GROUP NO. 335 PL 35

01

NAS 9-1100

LDW280-10823 C

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54186	LM-15(45)	1
		THRU	
LM	LDW280-54186	LM-4(34)	1
LM	LDW280-54185	LM-15(45)	1
LM		LM-14(44)	1
LM		LM-13(43)	1
LM		LM-12(42)	1
LM		LM-11(41)	1
LM		LM-10(40)	1
LM		LM-9(39)	1
LM		LM-8(38)	1
LM		LM-7(37)	1
LM		LM-6(36)	1
LM		LM-5(35)	1
LM	LDW280-54185	LM-4(34)	1
PART NO. LDW280-10823-27		30	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53185	LM-3(33)	1
LDW280-10823-19			
LEM	LDW280-28178	LTA-8(18)	1EA
PART NO. LDW280-10823-15 & -17		30	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LFM#126	LDW280-28178	LTA-8(18)	1EA
LDW280-10823-15-1&-17-1			
LM	LDW280-53186	LM-3(33)	1
MODEL OR END ITEM	NEXT ASSY	MODULE	REQD
PART NO. LDW280-10823-21			
LEM	LDW280-28178	LEM-2(32)	1EA
LEM	LDW280-28178	LEM-1(31)	1EA
PART NO. LDW280-10823-11&-13		30-	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	C	C	C		C				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO C	
LAST DASH NO. USED	-27	PRIM NO. 215	JK(001) 12162 7/1/18

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 LINE ITEM 1 DOCUMENTATION TYPE II

DRAWN BY	G.ZARCADOOLAS 4-22-66	RELIABILITY	
LAYOUT BY	S. SIDMAN 5-6-65		
CHECKED BY	EG 4-28-66		
GR LEADER	4. Paster 5/5/66		
VEH DSGN INT	[illegible] 5/5		
STRUCTURES	[illegible] 5/6	PROJ ENGR	J. Aller/RMC 5-16-66
STRUCTURES	Holderman 5/6	REL GROUP	G. Casamassa
WEIGHTS	[illegible] 5-16		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SKIN
ASCENT STAGE-CABIN-THERMAL-X252.0

SIZE B CODE IDENT NO. 26512 LDW280-10823 C
SCALE NONE SHEET 1.00 OF 4

REV "C" CDK 5-15-68

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
A	1	1.00, 1.10 2.00 & 3.00	4 B 8 B				✓	E.O. A1	ADDED -15 & -17 REMOVED -11 & -13 FROM LTA-8 ADDED SH 1.10 SH 1.00 OF 4 WAS 1.00 OF 3	LTA-8		✓ RL	NISBET 7-11-66		
B	1	1.00, 1.10 2.00 & 3.00							ADDED -19 N/A LDW280-53185 & -21 N/A LDW280-53186 EFF LM-3 TO LM-15 EG	LM-3 TO LM-15	NOT	REQD	HIPPLER 12-8-66		
C	1	2.00 1.10		6	✓			LEO280-432	IN B/M FOR -15 & -17 MAKE FROM LDW280-11310-11 WAS MAKE FROM LDW280-11310	LTA-8 LM-1, LM-2	NOT	REQD	BURION 4-23-68		
	2	3.00		1	✓			LEO280-502	ADDED NOTE 2	LTA-8 LM-1 THRU LM-15	✓				
	3	3.00	7A				✓	EO C3	FOR -21 F/D (1) #50 DRILL RELOCATED	LM-3 THRU LM-15	✓				
	4	1.00, 2.00 3.00	5C	LFM 140		✓		EO C4 LCD2360	REMOVED LM-4(34) THRU LM-15(45) EFF FOR -19 & -21 ADDED -23, -25 & -27	LM-4 THRU LM-15	-19 -21				
	5	2.00 3.00		LFM 140		✓		EOC5 LCD2360	REF EO C4 IN FLD & M/B: (WAS) ADD -23 IDENTICAL TO -21 EXCEPT AS SHOWN. -23 EFF. LM-4(34) THRU LM-15(45) N/A -23, LDW280-53186 (S/B) ADD -23 IDENTICAL TO -19 EXCEPT AS SHOWN -23 EFF. LM-4(34) THRU LM-15(45). N/A -23 LDW280-53185	LM-4 THRU LM-15	NOT	REQD			
	6	1.00		0 LFM 140		✓		LEO280-916 LCD2360	IN MODEL BLOCK FOR PART NO -23 & -25 REMOVED LM-4(34) THRU LM-15(45) EFF & NEXT ASSY LDW280-53185, LDW280-53186	LM-4 THRU LM-15		✓			
	7	1.00				✓		LEO280-919 LCD2360	IN MODEL BLOCK REVISED NEXT ASSEMBLY LDW280-54185 & LDW280-54186 FOR DASH-27	LM-4 THRU LM-15	NOT	REQD		5/20/68	
	8		4B 2C	LFM #126		✓		LCD1021-33	ADDED -15-1 & -17-1	LTA-8	NOT	REQ'D			

CHG APPROVED

LTR	GROUP LDR	VEH.DES.INT.	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY	THERMO
A							
B	——						
C		5/10/68	5/10/68	FEB			

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10823	C

SCALE NONE SHEET 1.10

ENG 77.16 3-66

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NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10823-17-1	E	SKIN	MAKE FROM LDW280-11310-13-4			23 X 37	NONE	NONE	2B
		LDW280-10823-15-1	E	SKIN	MAKE FROM LDW280-11310-13-4			23 X37	NONE	NONE	4B
		LDW280-10823-27	E	DOUBLER	AL ALY SH	QQ-A-250/15	ALCLAD 2024-T3	.020X17X15	NONE	76	5C
		LDW280-10823-21	E	SKIN	MAKE FROM LDW280-10870			~x23 x36 5/8	NONE	NONE	7B
		LDW280-10823-19	E	SKIN	MAKE FROM LDW280-10870			~x22 5/8 x36 3/4	NON	NONE	4B
		LDW280-10823-17	E	SKIN	MAKE FROM LDW280-11310-11			~X23X36 5/8	NONE	NONE	7B
		LDW280-10823-15	E	SKIN	MAKE FROM LDW280-11310-11			~x22 5/8x36 3/4	NONE	NONE	4B
		LDW280-10823-13	E	SKIN	MAKE FROM LDW280-10870			~X23X36 5/8	NONE	NONE	7B
		LDW280-10823-11	E	SKIN	MAKE FROM LDW280-10870			~X22 5/8X36 3/4	NONE	NONE	4-B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						76	ALODINE	LSP-14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10823	C

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

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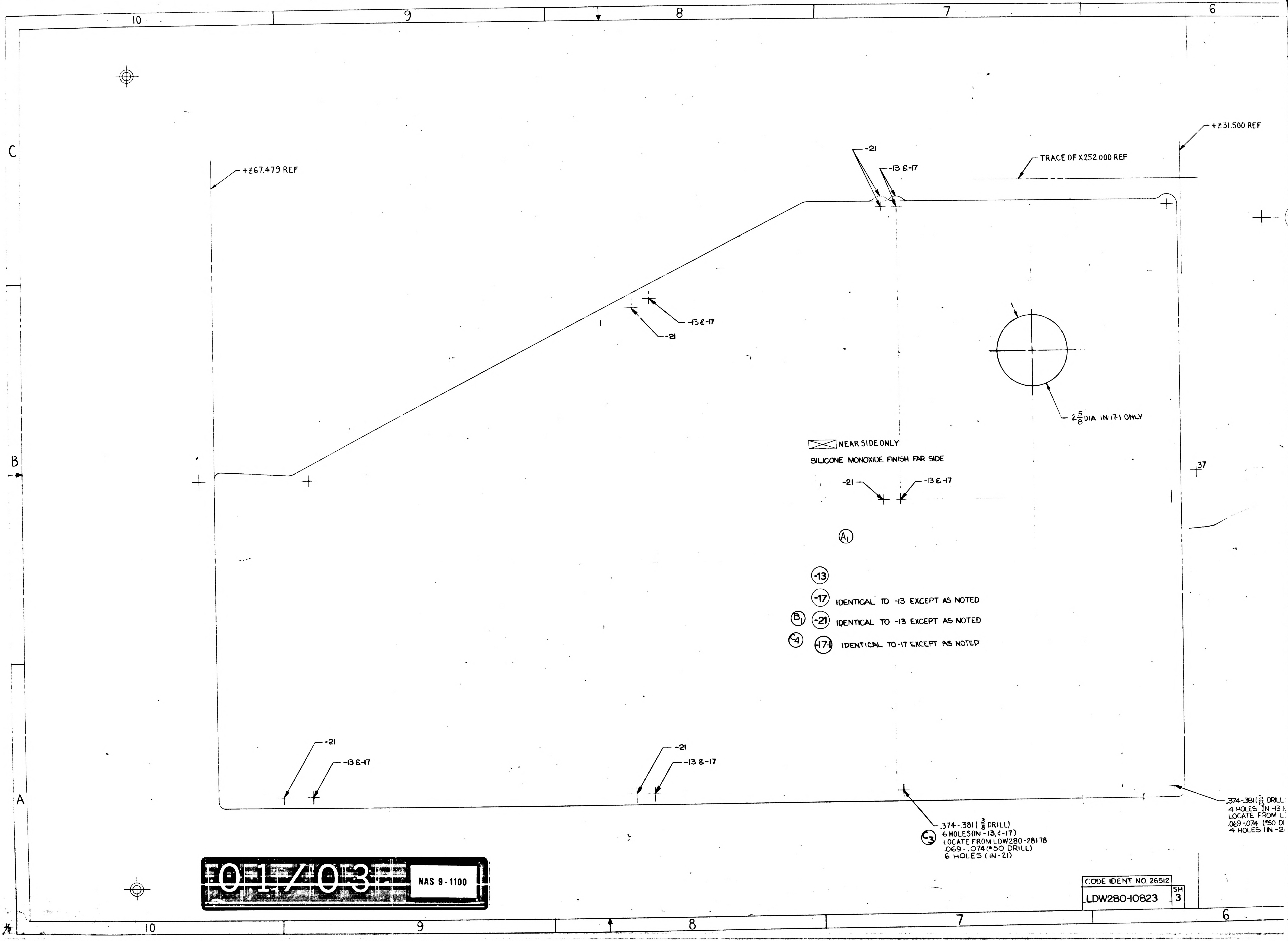
NAS 9-1100

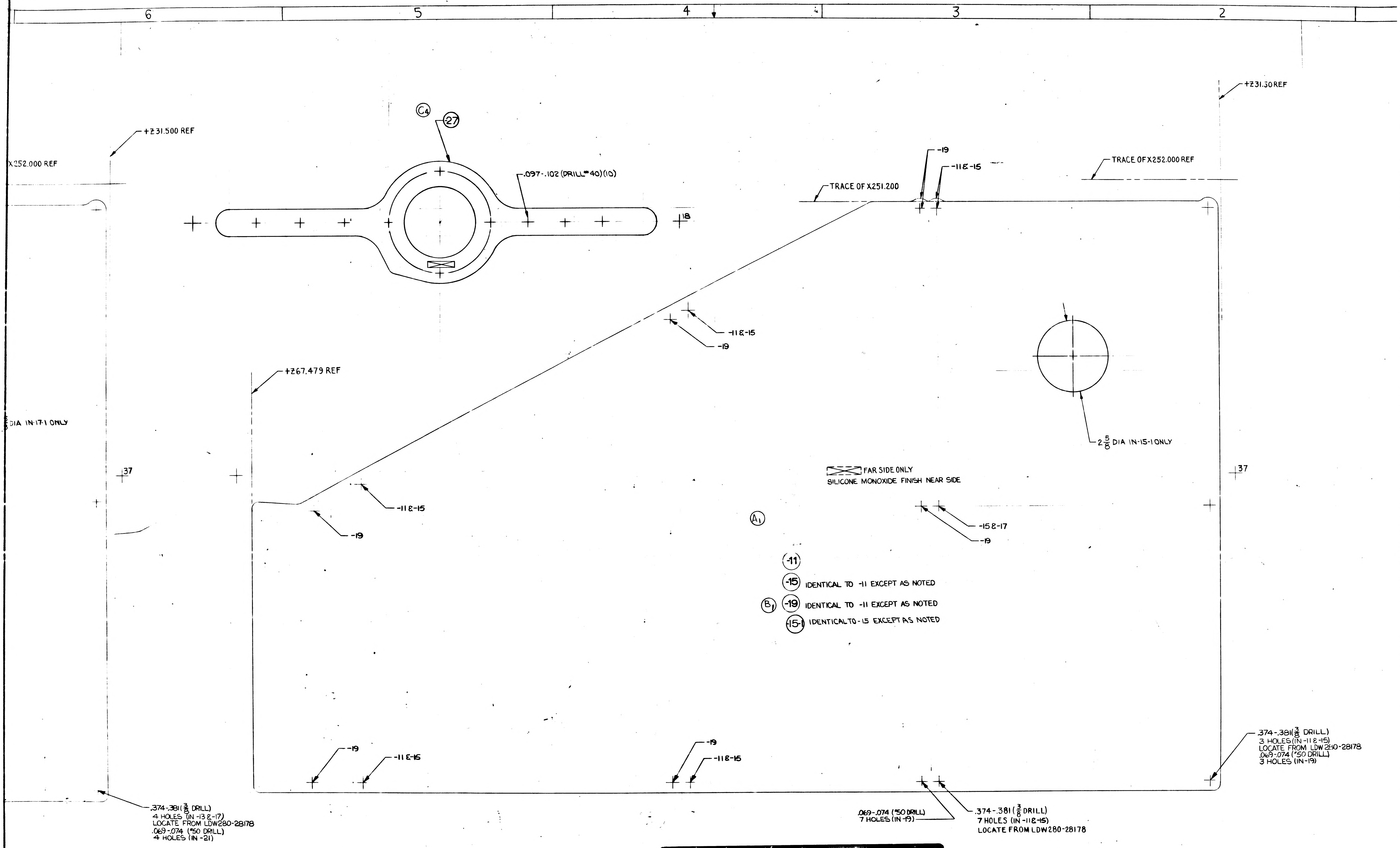


10
9
8
7
6
C
B
A
+Z67.479 REF
+Z31.500 REF
TRACE OF X252.000 REF
-21
-13 & -17
-21
-13 & -17
2 5/8 DIA IN-17-1 ONLY
NEAR SIDE ONLY
SILICONE MONOXIDE FINISH FAR SIDE
-21
-13 & -17
A1
-13
-17 IDENTICAL TO -13 EXCEPT AS NOTED
B1 -21 IDENTICAL TO -13 EXCEPT AS NOTED
C4 -17-1 IDENTICAL TO -17 EXCEPT AS NOTED
37
-21
-13 & -17
-21
-13 & -17
C3 .374-.381 (3/8 DRILL) 6 HOLES (IN -13, & -17) LOCATE FROM LDW280-28178 .069-.074 (#50 DRILL) 6 HOLES (IN -21)
.374-.381 (3/8 DRILL 4 HOLES (IN -13 & LOCATE FROM L .069-.074 (#50 D 4 HOLES (IN -2
10
9
8
7
6

01/03 NAS 9-1100

CODE IDENT NO. 26512

LDW280-10823 SH 3


6
5
4
3
2
C4
-27
+Z31.500 REF
X252.000 REF
.097-.102 (DRILL #40)(10)
18
+Z31.50 REF
-19
-11 & -15
TRACE OF X252.000 REF
TRACE OF X251.200
-11 & -15
-19
+Z67.479 REF
DIA IN-17-1 ONLY
2 5/8 DIA IN-15-1 ONLY
37
37
FAR SIDE ONLY
SILICONE MONOXIDE FINISH NEAR SIDE
-11 & -15
-19
A1
-15 & -17
-19
-11
-15 IDENTICAL TO -11 EXCEPT AS NOTED
B1 -19 IDENTICAL TO -11 EXCEPT AS NOTED
-15-1 IDENTICAL TO -15 EXCEPT AS NOTED
-19
-11 & -15
-19
-11 & -15
.374-.381 (3/8 DRILL)
3 HOLES (IN -11 & -15)
LOCATE FROM LDW 280-28178
.069-.074 (#50 DRILL)
3 HOLES (IN-19)
.374-.381 (3/8 DRILL)
4 HOLES (IN -13 & -17)
LOCATE FROM LDW280-28178
.069-.074 (#50 DRILL)
4 HOLES (IN -21)
.069-.074 (#50 DRILL)
7 HOLES (IN -19)
.374-.381 (3/8 DRILL)
7 HOLES (IN -11 & -15)
LOCATE FROM LDW280-28178

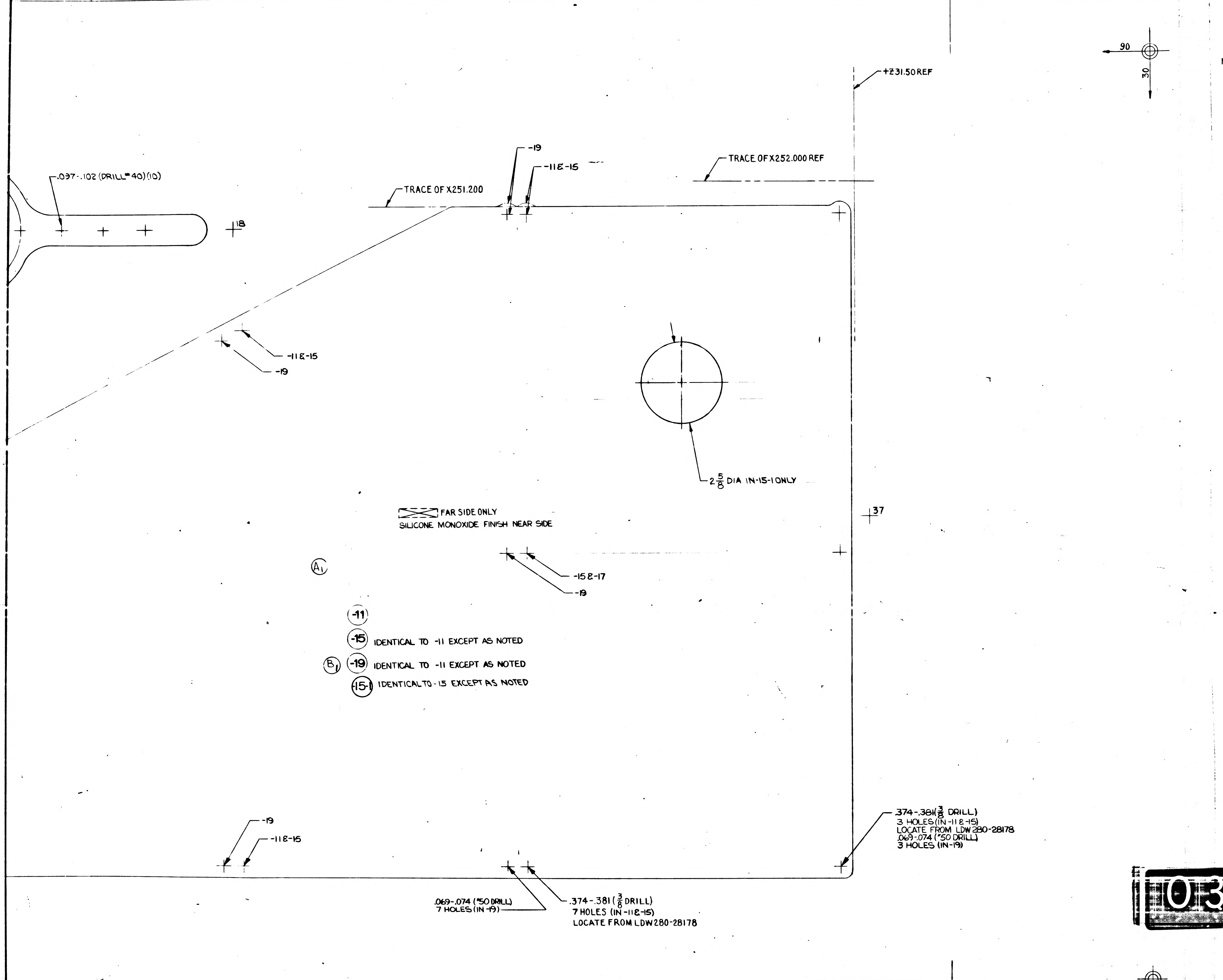
02/03

NAS 9-1100

CODE IDENT NO. 26512
LDW280-10823 SH 3

CODE IDENT NO. 26512
LDW280-10823 SH 3

6
5
4
3
2


90
30
+231.50 REF
-19
-11 & -15
TRACE OF X252.000 REF
.097-.102 (DRILL #40)(10)
TRACE OF X251.200
18
-11 & -15
-19
2 5/8 DIA IN -15-1 ONLY
FAR SIDE ONLY
SILICONE MONOXIDE FINISH NEAR SIDE
37
A1
-15 & -17
-19
-11
-15 IDENTICAL TO -11 EXCEPT AS NOTED
B1 -19 IDENTICAL TO -11 EXCEPT AS NOTED
-15-1 IDENTICAL TO -15 EXCEPT AS NOTED
-19
-11 & -15
.374-.381 (3/8 DRILL)
3 HOLES (IN -11 & -15)
LOCATE FROM LDW280-28178
.069-.074 (#50 DRILL)
3 HOLES (IN -19)
.069-.074 (#50 DRILL)
7 HOLES (IN -19)
.374-.381 (3/8 DRILL)
7 HOLES (IN -11 & -15)
LOCATE FROM LDW280-28178

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS
2. MATERIAL, FINISHES, HANDLING AND PERMISSIBLE DEVIATIONS PER LPC-280-16.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▨	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	√

DWG SIZE 34 X 106

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 117) = 29.5 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 7.5 SQ. FT.

PRINT TRIM LINE

03/03

NAS 9-1100

CODE IDENT NO. 26512
LDW280-10823 SH 3

	R GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM MODEL OR END ITEM	SIZE J	CODE IDENT NO. 26512	LDW280-10823	C
	SCALE FULL			SHEET 3.00

LDW280-10823 C

FOR PHOTO REPRODUCTION

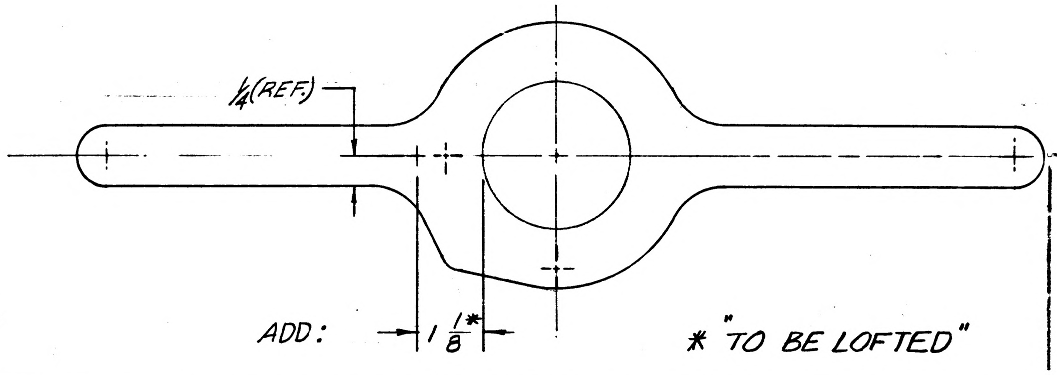
K2

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10823 EO NO. D1
CONTROL INFO NO. LDW280B3238

IN F/D: FOR -27,
.097-.102 NO. 40 DRILL, S/B 11 HOLES
(WAS 10 HOLES)



* "TO BE LOFTED"

LFM

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 2360 PKG. #28

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
PLUME HEATING PROTECTION	ADDED: .097 -.102 (NO. 40 DRILL) S/B~11 HOLES (WAS 10 HOLES)	JK 5/11/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
LM	LFM 140	LM-4(34) &	LM-5(35)	✓		-27	
LM		LM-6(36) THRU	LM-15(45)				

APPROVED BY	V.D.I.	THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
DATE	5/4/68	5/9/68		5/2/67			5/9/68	5/11-68

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SKIN~ASCENT STAGE~CABIN THERMAL~X257.00	LDW280-10823	D1

5/10/68
ISSUED BY CMGREEN X1392 SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01
NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10823 | EO NO. D2
CONTROL INFO NO. LDW280-B4440

IN F/D & L/M CREATE -29, SAME AS -21 EXCEPT:
ADD HOLE (2 5/8 DIA.) AS SHOWN IN -17-1 AND
MATERIAL IS .004 AL ALLOY SH. QQ-A-250/4, 2024-T81
IN F/D & L/M CREATE -31 SAME AS -19 EXCEPT MAT. IS .004
AL ALLOY SH QQ-A-250/4, 2024-T81
ADD NOTE * (* USE NEXT AVAILABLE NOTE NO.)
*-29 & -31 TO BE FINISHED ON EXTERIOR SURFACE WITH
"PYROMARK" BLACK PAINT PER LPC280-5
IN M/B ADD -29 EFF. LM-4 (34), N/A LDW280-53186
-31 EFF. LM-4 (34), NA LDW280-53185
IN M/B FOR -27 REMOVE LM-4(34) EFFECTIVITY N/A LDW280-54185 & ADD LM-4(34) N/A LDW280-53185 FOR 27

LFM

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☑	LCD 2360 PKG 32 SH 2

REASON FOR EO: UPDATED LM-4(34) REQ.

DESCRIPTION OF EO: ADDED NOTE *
CREATED -29 & -31
FOR -27 N/A LDW280-53185 WAS LDW280-54185 FOR LM-4(34)

GAEC EO RELEASE: H.F. 7/17/

MODEL	EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 140	LM-4 (34)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK NOT | SCRAP REQD

APPROVED BY	VDI	THERM	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
DATE	7/11/68	7/12/68		7/11/68			7/13/68	7-17-68

PRIORITY: C
DRAWING TITLE: SKIN ASCENT STAGE CABIN THERMAL X252.0
DRAWING NO. LDW280-10823
EO NO. D2

7-15-68
ISSUED BY H. TREFFEISEN x 7033 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 1072
CONTROL INFO NO. LDW280B - 4403

REVISE ~~5~~ LM-4(34) N/A S/B LDW280 - 53186
WAS N/A LDW280 - 54186 FOR THE FOLLOWING DWGS & DASH NO.

DWG. NO.	DASH NO. *	N/A FOR LM-4(34)	N/A FOR LM-5(35) THRU LM-15(45)	CHG. NO.
LDW280- 10743	-11, -17 -43	LDW280- 53186	LDW280 - 54186	H4
-10823	-27			D3
-11291	-19, -20, -33			D2
-11732	-11, -15, -17, -19 -31, -23, -25, -27			B2
-11733	-11, -13 -15 -21, -23, -29			A6
-11734	-17			A6
-11738	-5, -7, -9 -31, -37, -39			D2
-11800	-15, -17			A8
-11801	-13, -15, -17 -21, -23			A4
-10827	-29			B2
-11814	-15, -17			A4
LDW280- 11816	-11, -17, -19 -13, -15	LDW280-53186	LDW280 - 54186	A4

END ITEM & NO. REQD/MOD SAME AS LM-3 (33)

01
NAS 9-1100

LFM

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☑	LCD 2360 PKG 32 SH 2 & 3	(5)

REASON FOR EO: UPDATED LM-4 (34) REQ.

DESCRIPTION OF EO: For * REVISED EFF.(LM-4), NEXT ASSY. LDW280-53186 WAS LDW280 - 54186

GAEC EO RELEASE: JK 7/30/68

MODEL	~~PROCURING ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM140	LM-4(34)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG	RECORD EO	REWORK	SCRAP
✓		NOT	REQD

APPROVED BY								
DATE	7/11/68	7/12/68		7/10/68			7/13/68	7/30/68
	VDI	~~SUPPORT~~ THERM	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DWG.	LEO 280	1072

07-15-68
ISSUED BY H. TREFFEISEN x7033 SECTION VDI GROUP NO. 335 PL 25

LDW280-10824 C

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM #126	LDW280-28178	LTA-8(18)	1 EA

PART NO. LDW280-10824-19-1,-21-1

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM #126	LDW280-28882	LTA-8(18)	1

PART NO. LDW280-10824-17-1

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28882	LTA-8(18)	1

PART NO. LDW280-10824-23

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28882	LTA-8(18)	1
LM	LDW280-28178	LTA-8(18)	1

PART NO LDW280-10824-17

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28178	LTA-8(18)	1 EA

PART NO. LDW280-10824-19&21

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53186	LEM-3(33)	1 EA

PART NO. LDW280-10824-25&27

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28178	LEM-2(32)	1 EA
LEM	LDW280-28178	LEM-1(31)	1 EA

PART NO. LDW280-10824-11,-15&-29

GAEC SCH NO. 30-

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	C	C	C		C				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-29

GRUMMAN REL INFO C

PRIM NO.	JL601		
215	NR 513-7-6-67	S&G	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED

FRACTIONS	DECIMALS	ANGLES
±1/32	±.020	±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY	G.ZARCADOOLAS 4-26-66	RELIABILITY	
LAYOUT BY	S.SIDMAN 5-5-66		
CHECKED BY	EG 4-29-66		
GR LEADER	J. Pusateri 5/5/66		
VEH DSGN INT	5/5		
STRUCTURES	RN FCS 5/5	PROJ ENGR	/RMC 5-16-66
STRUCTURES	H. Alderman 5/6	REL GROUP	J. Casamassi 5-21
WEIGHTS	DJL 5-12		

(2)

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SKIN
ASCENT STAGE-CABIN-THERMAL-X230.0

SIZE	CODE IDENT NO.		
B	26512	LDW280-10824	C
SCALE	NONE	SHEET 1.00 OF 4	

REV C 5-15-68

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10, 2.00 & 3.00	6A & 3.B				✓	E.C. A1	ADDED -17, -13 & -21, REMOVED -11, -13 & -15 FROM LTA-8 ADDED SH 1.10 SH 1.00 OF 4 WAS 1.00 OF 3.	LTA-8 (18)		✓ S.J.	NISBET 7-12-66		
B	1	1.10 2. & 3.	3B					EO B1	ADDED -23. ON -17, ADDED N/A LDW280-28882, LTA-8	LTA-8	✓		C. D'AVELLA 7-5-67 JG		
	2	1.1.10 2. & 3.	6A					EO B2	ADDED -25 FOR LM3 THRU LM15	LM3 THRU -15	NOT	REQD			
	3	1.1.10, 2 & 3.	6A					EO B3	IN FLD, B/M & MOD BLK CREATED -25 REMOVED -13	LM-1 & -2		-13			
	4	1.1.10, 2 & 3.	3B					EO B4	ADDED -27 FOR LM-3 THRU LM-15	LM-3 THRU -15	NOT	REQD			
	5	1.1.10, 2 & 3.	6A					EO B5	REF. EO B3, -29 WAS -25.	LM-1 & -2		-13			
	6	1.10 & 3	1D		✓			LEO280-502	ADDED NOTE 2	LTA8, LM4 THRU -15	✓				
	7	1.10 & 3	3B 6A			✓		EO B7-CCA-553 LCD-1069	REVISED TRIM OF -15, -25, -27 & -29.	LM-1 THRU LM-15	✓				
C	1	1.10, 3.00	8A 3B				✓	EO C1	TRIMMED -25, -27	LM-3 THRU LM-15	✓		H. BARFOOT 4-26-68		
	2	1.10, 3.00	1D			✓		EO C2 LCD 2287	FOR -23 ADDED NOTE #3	LTA-8	✓				
	3	1.00, 1.10		0		✓		LEO 280-916 LCD 2360 ...28	IN MODEL BLOCK: FOR -25 & -27 REMOVED LM-4 THRU LM-15 EFF & NEXT ASSY LDW 280-53186	LM-4 THRU LM-15		✓			
	4	1.00, 1.10, 2.00 & 3.00		LFM #126		✓		LCD 1021-33 CCA 498	ADDED -17-1, -19-1, -21-1	LTA-8	NOT	REQD		5/10/68	

CHG APPROVED LTR	GROUP LDR	VEH.DES.INT	STRUCTURES	STRUCTURES	WEIGHTS	THERMO
A						
B						
C	FAR 5/9/68	JAS 5/9/68	GJS 5/10/68	for FEB		6/68

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10824	C
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10824 21-1	E	SKIN	MAKE FROM LDW280-11310-13-4			~ x 14 x 37	NONE	NONE	6A
		LDW280-10824-19-1	E	SKIN	MAKE FROM LDW280-11310-13-4			~ x 16 x 17	NONE	NONE	3B
		LDW280-10824-17-1	E	SKIN	MAKE FROM LDW280-11310-13-4			~ x 13 x 37	NONE	NONE	6C
		LDW280-10824-27	E	SKIN	MAKE FROM LDW280-10870			~X11 X16	NONE	NONE	3B
		LDW280-10824-25	E	SKIN	MAKE FROM LDW280-10870			~X11 X13	NONE	NONE	6A
		LDW280-10824-23	E	SKIN	MAKE FROM LDW280-11310			~X16 X16 3/4	NONE	SEE NOTE 3	3B
		LDW280-10824-21	E	SKIN	MAKE FROM LDW280-11310			~X13 3/8 X36 3/4	NONE	NONE	6A
		LDW280-10824-19	E	SKIN	MAKE FROM LDW280-11310			~X16 X16 3/4	NONE	NONE	3B
		LDW280-10824-17	E	SKIN	MAKE FROM LDW280-11310			~X12 7/8 X36 3/4	NONE	NONE	6C
		LDW280-10824-15	E	SKIN	MAKE FROM LDW280-10870			~X11 X13	NONE	NONE	6A
		LDW280-10824-29	E	SKIN	MAKE FROM LDW280-10870			~X11 X16	NONE	NONE	3B
		LDW280-10824-11	E	SKIN	MAKE FROM LDW280-10870			~X12 7/8 X36 3/4	NONE	NONE	6C

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

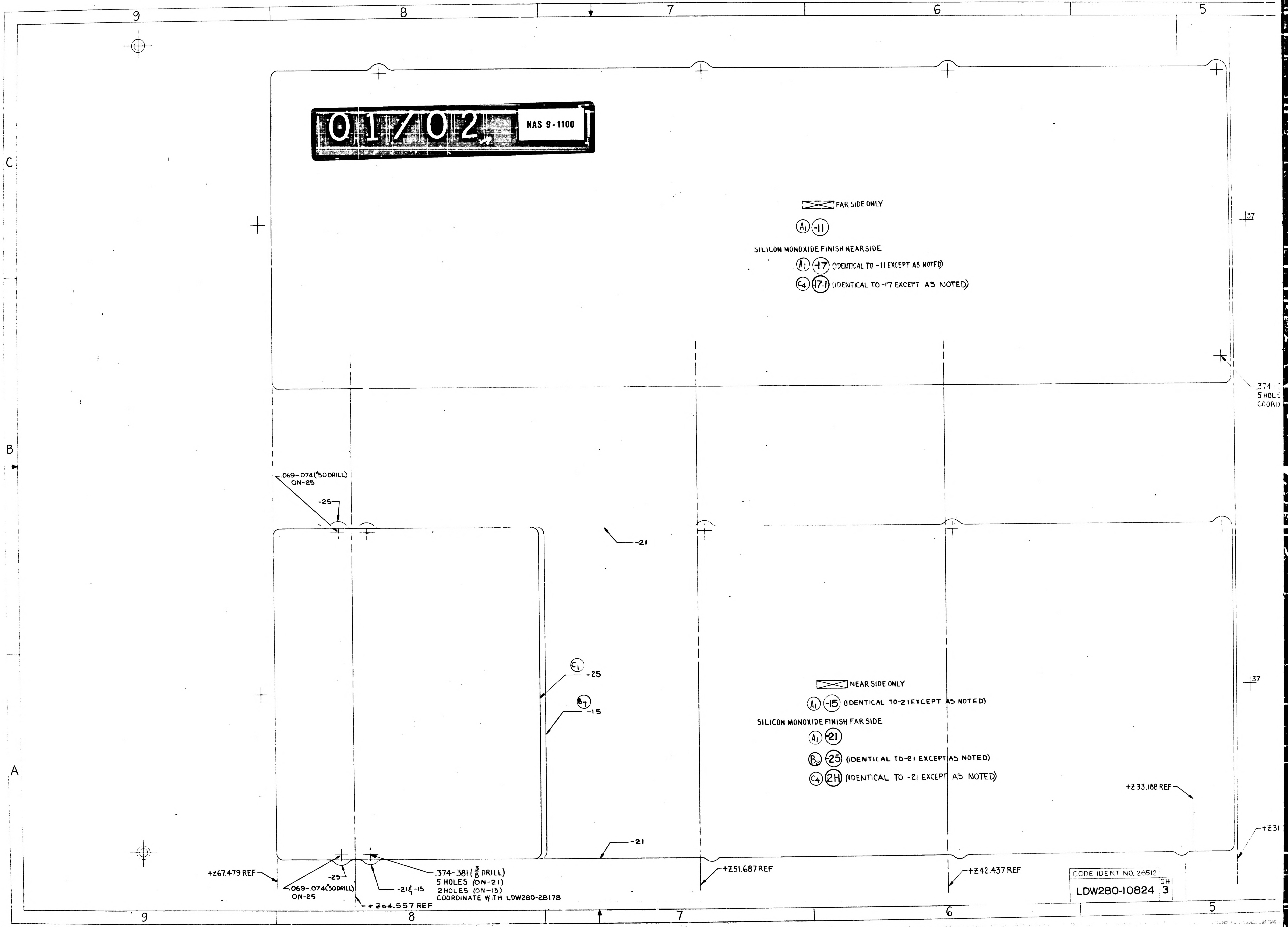
SIZE	CODE IDENT NO.		
B	26512	LDW280-10824	C
SCALE NONE		SHEET 2.00	

ENG 77.2 7-65

01

NAS 9-1100

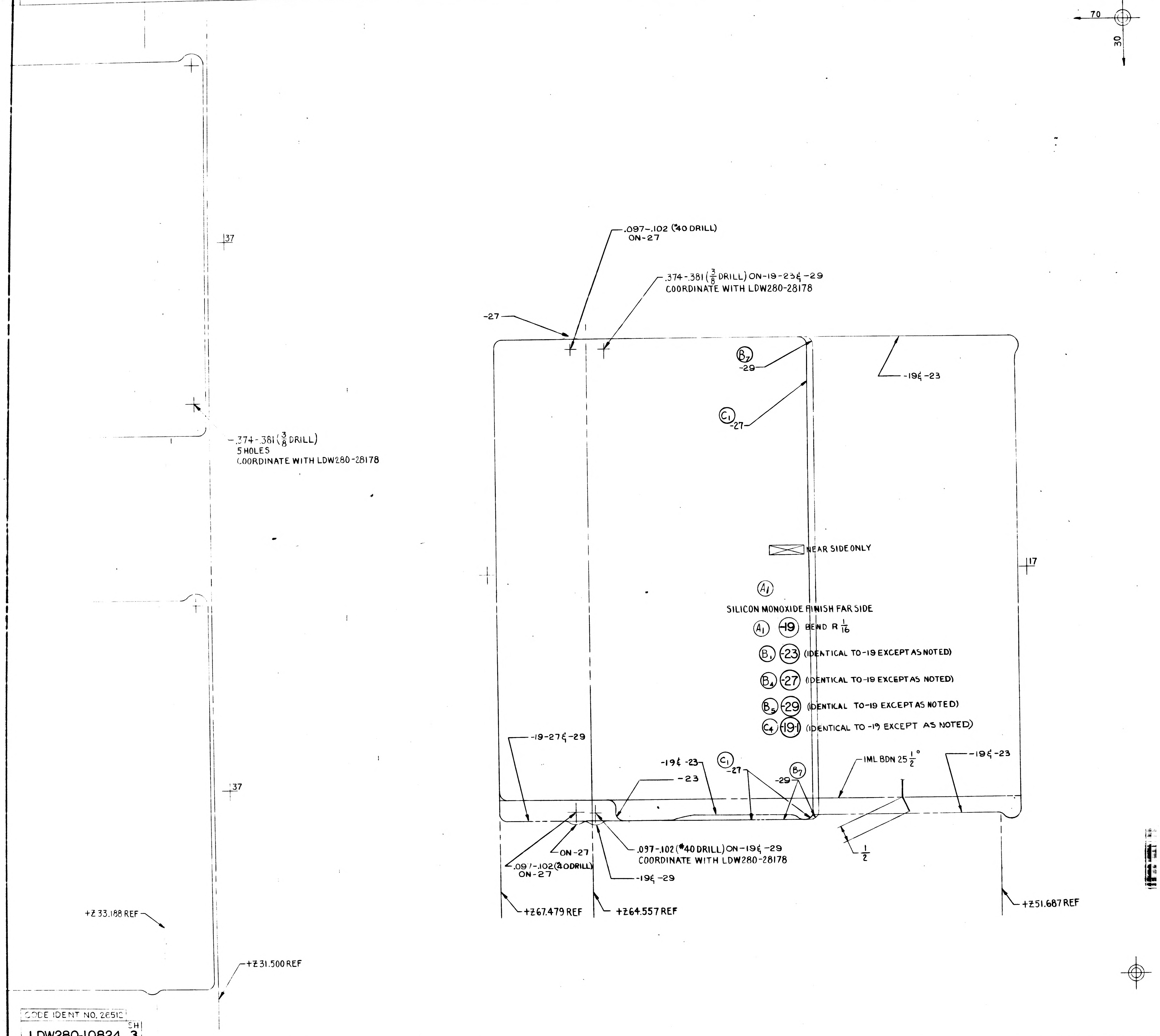
01702 NAS 9-1100



9
8
7
6
5
C
B
A
FAR SIDE ONLY
(A1) (-11)
SILICON MONOXIDE FINISH NEAR SIDE
(A1) (-17) (IDENTICAL TO -11 EXCEPT AS NOTED)
(C4) (-17-1) (IDENTICAL TO -17 EXCEPT AS NOTED)
.374-
5 HOLE
COORD
37
.069-.074 (#50 DRILL) ON-25
-25
-21
(C1) -25
(B7) -15
NEAR SIDE ONLY
(A1) (-15) (IDENTICAL TO-21 EXCEPT AS NOTED)
SILICON MONOXIDE FINISH FAR SIDE
(A1) (-21)
(B2) (-25) (IDENTICAL TO-21 EXCEPT AS NOTED)
(C4) (-21-1) (IDENTICAL TO -21 EXCEPT AS NOTED)
37
+Z33.188 REF
+Z31
-21
+Z67.479 REF
-25
.069-.074 (#50 DRILL) ON-25
-21 & -15
.374-.381 (3/8 DRILL)
5 HOLES (ON-21)
2 HOLES (ON-15)
COORDINATE WITH LDW280-28178
+Z64.557 REF
+Z51.687 REF
+Z42.437 REF

CODE IDENT NO. 26512
LDW280-10824 SH 3

CHECK TRANS GROWS-25-66 R.F.
MIC P.F.F. 4-21-66


70
30
.097-.102 (#40 DRILL)
ON-27
.374-.381 (3/8 DRILL) ON-19-23 & -29
COORDINATE WITH LDW280-28178
-27
B7
-29
-19 & -23
C1
-27
37
.374-.381 (3/8 DRILL)
5 HOLES
COORDINATE WITH LDW280-28178
NEAR SIDE ONLY
17
A1
SILICON MONOXIDE FINISH FAR SIDE
A1 -19 BEND R 1/16
B1 -23 (IDENTICAL TO -19 EXCEPT AS NOTED)
B4 -27 (IDENTICAL TO -19 EXCEPT AS NOTED)
B5 -29 (IDENTICAL TO -19 EXCEPT AS NOTED)
C4 -191 (IDENTICAL TO -19 EXCEPT AS NOTED)
-19-27 & -29
-19 & -23
-23
C1
-27
B7
-29
IML BDN 25 1/2°
-19 & -23
37
ON-27
.097-.102 (#40 DRILL)
ON-27
.097-.102 (#40 DRILL) ON-19 & -29
COORDINATE WITH LDW280-28178
-19 & -29
1/2
+Z 67.479 REF
+Z 64.557 REF
+Z 51.687 REF
+Z 33.188 REF
+Z 31.500 REF
5
4
3
2
1

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS
2. MATERIAL, FINISHES, HANDLING AND PERMISSIBLE DEVIATIONS PER LPC-280-16.
3. ON-23 COVER EXTERIOR SURFACE WITH 401-B2 3-M GRAY VELVET PAINT, LSM 14-4405, PER LSP-14-4503

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ [redacted].	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	√

DWG SIZE 34 X 88

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 98) = 24.5 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 6.5 SQ. FT.

PRINT TRIM LINE

LDW280-10824 C

02/02 NAS 9-1100

CODE IDENT NO. 26512
LDW280-10824 SH 3

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

LEM	SIZE J	CODE IDENT NO. 26512	LDW280-10824	C
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

2/2

FOR PHOTO REPRODUCTION

LDW280-10824 C

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW280-10824 | EO NO. D1
CONTROL INFO NO. LDW280-B 4441

LFM

IN F/D & L/M

CREATE -33 SAME AS -25
-31 SAME AS -27

EXCEPT

MAT. IS .004 AL ALLOY SH 2024-T81 QQ-A 250/4

IN M/B ADD: -33 & -31 , LM-4 (34) EFF , N/A LDW280-53186

ADD NOTE * USE NEXT AVAILABLE NOTE NO.)

* -33 & -31 TO BE FINISHED ON EXTERIOR SURFACE WITH "PYROMARK" BLACK PAINT PER LPC 280-5

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 2360 PKG 32 SH 2

⑤

GAEC EO RELEASE C
H.F. 7/17/8

REASON FOR EO: UPDATED LM-4(34) REQ.

DESCRIPTION OF EO: CREATED -33 & -31 & ADDED NOTE *

MODEL	EFFECTIVITY: ~~PROCURING ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 140	LM-4 (34)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓ REVISE DWG	RECORD EO	HOT REWORK	REQ'D SCRAP

APPROVED BY									
DATE	7/11/68	7/12/68		7/11/68	7/11/68		7/13/68	7-17-68
	VDI	~~SUPPORT~~ THERM	RELIAB. GROUP	GROUP LEADER	STRESS GROUP		LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY C

DRAWING TITLE: SKIN ASCENT STAGE CABIN THERMAL x 230.0

DRAWING NO. LDW280-10824 | EO NO. D1

7-15-68
ISSUED BY H. TREFFEISEN x 7033 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-10825 B

LFM

LFM # 126	LDW 280-28178	LTA-8(18)	1
LEM	LDW280-28178	LTA-8(18	1

LDW 280-10825-23-1

LEM	LDW280-28178	LEM-2(32)	2
LEM	LDW280-28178	LEM-1(31)	2
LEM	LDW280-28178	LTA 8(18)	2
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10825-19		GAEC SCH NO. 30-	

LFM # 126	LDW280-28178	LTA-8(18)	1
LEM	LDW280-28178	LTA-8(18)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10825-15		GAEC SCH NO. 30-	

LFM # 126	LDW280-28178	LTA-8(18)	1
LEM	LDW280-28178	LTA-8(18)	1

LDW280-10825-21

LEM	LDW280-28178	LEM-2(32)	3
LEM	LDW280-28178	LEM-1(31)	3
LFM	LDW280-28178	LTA-8(18)	3
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10825-11		GAEC SCH NO. 30-	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	B	B	B		B				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO B	
		PRIM NO.	JK(001)
LAST DASH NO. USED	-29	215	MP-16 B-5/2/68

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100 | LINE ITEM 1 | DOCUMENTATION TYPE II

DRAWN BY	G.ZARCADOOLAS 5-5-66	RELIABILITY	
LAYOUT BY	S.SIDMAN 5-11-66		
CHECKED BY	5-9-66		
GR LEADER			
VEH DSGN INT			
STRUCTURES	FED 5/16	PROJ ENGR	5-23
STRUCTURES	5/16	REL GROUP	5-27-66
WEIGHTS	5-23		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ZEE
ASCENT STAGE - CABIN - THERMAL - X220.0

SIZE	CODE IDENT NO.		
B	26512	LDW280-10825	B
SCALE	NONE	SHEET 1.00 OF 4	

REV B CDR 5-15-68

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	2.00 3.00	6B 6D				√	EO A1	ADDED SH.1.10 SHEET 1.00 OF 4 WAS 1.00 OF 3 DELETED -13 & -17. ADDED -21 & -23	LTA-8, LEM-1, LEM-2		-13 & -17	L BRIDA 5-5-67		
	2	1.00, 2.00 3.00	5B 6E					EO A2	TRIMMED -21 IN MOD BLK REMOVED LM-1 & LM-2 FROM -21. ADDED -23.	LTA-8, LEM-1, LEM-2	✓	-21			
	3	1.00, 2.00, 3.00	6E					LE0280-412	ON INCORP. OF E.O.A2 -25 WAS -23		NOT	REQD			
	4	1.00						LE0280-427	ADDED LM-3 THRU LM-15 REQUIREMENTS FOR -21, -23	LEM-3 THRU LEM-15	NOT	REQD			
	5	1.00, 2.00 3.00	6E					EO A5	ADDED -27 REMOVED -25	LEM-1 LEM-2		-25			
	6	1.00, 2.00 3.00	6E					EO A6	ADDED -29 REMOVED -27			-27			
	7	1.00, 2.00 3.00	6D					EO A7 LCD #923	ON F/D, REVISED TRIM OF -23. RESTRICTED EFF OF -23 TO LTA-8 ONLY.	LTA-8, LM-1 THRU LM-15	✓	-23			
	8	1.00, 2.00 3.00	6D				√	EO A8	REF. EO A7 CREATED -23-1 RESTRICTED -23 TO LM-1 & -2 EFF		✓				
	9	3.00	5C						ON F/D 14 HOLES (ON -23) WAS 15 HOLES (DWG ERROR CORRECTION)	NOT REQD	NOT	REQD			
B	1	1.00, 2.00 3.00	6E			√		EO B1 LCD1069 CCA553	REMOVED -23 & -29. -15 WAS EFF LTA 8, LM 1 & 2 -21 WAS EFF LTA-8, LM3-15,	LM-1 THRU LM-15		-23 & -29	K EISELE 4-25-68		
	2	1.00					√	EO B2	ON -21 N/A WAS LDW 280-53186	NOT REQD	NOT	REQ'D			
	3	1.00 1.10		LFM126		√		LCD1021-33 OK	ON -15, -21 & -23-1 ADDED END ITEM LFM*126 REQUIREMENTS WCG	LTA-8	NOT	REQD		JAP 5/20/68	5-20

CHG APPROVED

LTR	GROUP LDR	VDI	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY		THERMO			
A											
B	5/10/68	5/10/68	5/13/68	FEE				5-20-68			

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10825	B
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10825-19	E	CLIP	AL ALY SH	QQ-A-283	7075	.040X2 1/8X2 1/8	T	88	3E
		-23-1		ANGLE		QQ-A-250/4	2024	.020X2 X 10	T42	76	6D
		-15		ANGLE		QQ A 362	NOTE 2	.020X1 5/8X20 3/4	NONE	NONE	6G
		-21		ANGLE		QQ-A-250/4	2024	.020X2X15 5/8	T42	76	6B
		LDW280-10825-11	E	ZEE	AL ALY SH	QQ-A-283	7075	.032X1 3/4X3 1/8	T6	88	3B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	AL HEAT TREAT	MIL-H-6088
76	ALODINE	LSP14-9010
88	ANODIZE	LSP14-9030
T42	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10825	B
SCALE NONE		SHEET 2.00	

B

ENG 77.2 7-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11439-29-1	E	SHIELD	MAKE FROM LDW280-11310-13-1			.012 x 20 1/2 x 34 3/8	NONE	NONE	
		-15-1			MAKE FROM LDW280-11310-13-4			.012 x 24 x 26 1/8	NONE	NONE	
		-13-1			MAKE FROM LDW280-11310-13-4			.012 x 22 3/8 x 33 1/2	NONE	NONE	
		-27			MAKE FROM LDW280-10870-11			.004 x 24 x 26 1/4	NONE	NONE	8B
		-31			AL ALLOY SH	QQ-A-250/5	ALCLAD 2024-T3	.032 x 23 1/2 x 35 3/4		NOTE 4	6B
		-23			MAKE FROM LDW280-10870-11			.004 x 20 1/4 x 32 1/4		NONE	3B
		-15			MAKE FROM LDW280-11310-11			.010 x 24 x 26 1/8			8B
		-13			MAKE FROM LDW280-11310-11			.010 x 22 3/8 x 33 1/2			6B
		LDW280-11439-29	E	SHIELD	MAKE FROM LDW280-11310-11			.010 x 20 1/2 x 34 3/8	NONE	NONE	3B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11439	B

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

LDW280-10826 A

LEM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28178	LTA-8(18)	1EA
LEM 126	LDW280-28178	LTA-8(18)	1EA

PART NO. LDW280-10826-15 GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28178	LEM 2(32)	2
LEM	LDW280-28178	LEM-1(31)	2
LEM	LDW280-28178	LTA-8 (18)	2

PART NO. LDW280-10826-19,-17 GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 126	LDW280-28178	LTA-8(18)	1EA
LEM	LDW280-28178	LEM-2(32)	1EA
LEM	LDW280-28178	LEM-1(31)	1EA
LEM	LDW280-28178	LTA-8 (18)	1EA

PART NO. LDW280-10826 - 13,-21 GAEC SCH NO. 30-

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -21

GRUMMAN REL INFO A

PRIM NO. 215 JK001 MP16A 5/12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY T.MACAULAY 5-6-66
LAYOUT BY SIDMAN 5-13-66
CHECKED BY EG 5-10-66
GR LEADER J. Pusateri 5/14
VEH DES INT
STRUCTURES 5/2
STRUCTURES Wilderman 5/16
WEIGHTS 5-23
RELIABILITY
PROJ ENGR 5-22
REL GROUP 5-27-66

® GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE-CABIN-THERMAL SHIELD

SIZE B
CODE IDENT NO. 26512
LDW280-10826 A
SCALE NONE
SHEET 1.00 OF 4.

REV "A" CDR 5-15-68

2-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
A	1	3.00 1.00 1.10 2.00						EO A1	SCRAPPED -11. CREATED NEW PART -21 TO REPLACE -11. ADDED SHEET 1.10.	LTA-8(18) LM-1 (31) LM-2(32)		-11	R.J. PRIZZI 2-23-68		
	2	1.00				✓		EO A2 LCD 1069 CCA 553	-15 WAS EFF LTA-8, LM1 & 2	LM-1(31) LM-2(32)		-15			
	3	1.00		LFM 126		✓		LCD 1021-33	ON -13, -15, -21 ADDED END ITEM LFM 126 REQUIREMENTS. WCG	LTA-8(18)	NOT	REQ'D			

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-66

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10826	A
SCALE NONE			SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10826-19	F	CHANNEL	AL ALLOY SH	QQ-A-283	7075	.032X2 7/8X3 5/8	T6	88	
								-17		CHANNEL		QQ-A-283	7075	.032X4X4 7/8	T6	88	
								-15		ANGLE		QQ-A-355	2024	.020X2X17	T3/T42	76	
								-13		ANGLE		QQ-A-355	2024	.020X1 7/8X17	T3/T42	76	
								LDW280-10826-21	E	ANGLE	AL ALLOY SH	QQ-A-355	2024	.020X3X26	T3/T42	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030
						76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10826	A

(A)

SCALE NONE

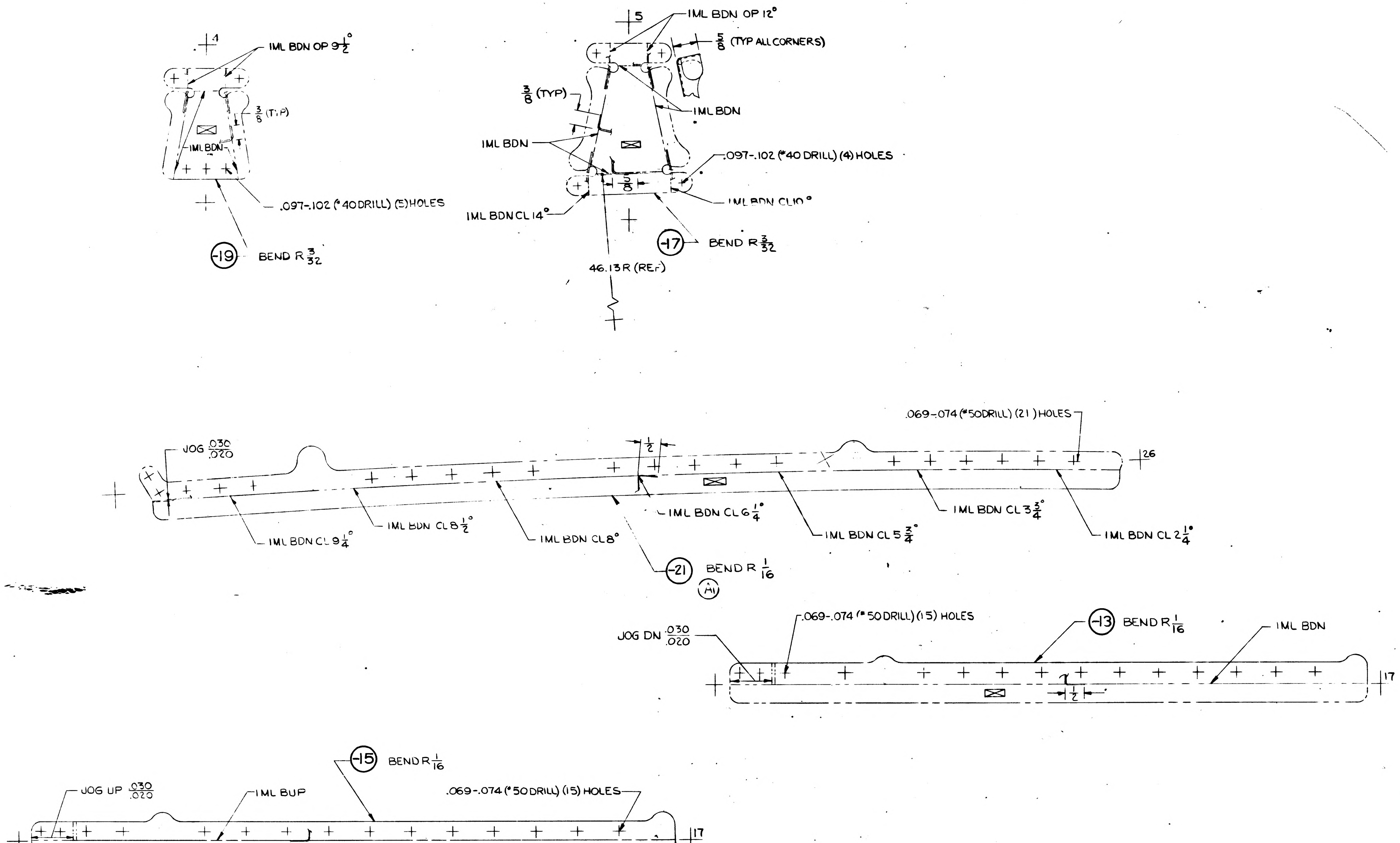
SHEET 2.00

ENG 77.2 7-66

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.



IML BDN OP 9½°
3/8 (TYP)
IML BDN
.097-.102 (#40 DRILL) (5) HOLES
-19
BEND R 3/32
IML BDN OP 12°
5/8 (TYP ALL CORNERS)
3/8 (TYP)
IML BDN
IML BDN
.097-.102 (#40 DRILL) (4) HOLES
IML BDN CL 14°
IML BDN CL 10°
5/8
-17
BEND R 3/32
46.13 R (REF)
.069-.074 (#50 DRILL) (21) HOLES
JOG .030/.020
½
26
IML BDN CL 9¼°
IML BDN CL 8½°
IML BDN CL 8°
IML BDN CL 6¼°
IML BDN CL 5¾°
IML BDN CL 3¾°
IML BDN CL 2¼°
-21
BEND R 1/16
A1
JOG DN .030/.020
.069-.074 (#50 DRILL) (15) HOLES
-13
BEND R 1/16
IML BDN
½
17
-15
BEND R 1/16
JOG UP .030/.020
IML BUP
.069-.074 (#50 DRILL) (15) HOLES
½
17

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD 10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	E	26512	LDW280-10826	A
	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

LDW280-10826 A

LDW280-10826 A

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10826
EO NO. B1
CONTROL INFO NO. LDW 280B3960

IN M/B ON -13, DELETE LFM 126 REQ'TS

N/A LDW280-28178

LFM

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 1021-33 CCA 495 PKG 4 (5)

REASON FOR EO: DRAWING CORRECTION

DESCRIPTION OF EO: IN M/B ON -13, DELETED LFM 126 REQ'TS

EO RELEASE: C JK 6/22/68

MODEL	~~PROCURING ACTIVITY~~ EI NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 126	LTA-8 (18)	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO

DISPOSITION OF PARTS: REWORK; ✓ SCRAP

	VDI	THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY								
DATE	6/19/68	6-20-68		6/18/68	6/21/68		6/21/68	6-22-68

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	ANGLE - ASCENT STAGE-CABIN THERMAL SHIELD	LDW280-10826	B1

6-24-68

ISSUED BY R. SMALL x86048 6/17/68 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54186	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
LM		LM-6(36)	1
LFM-140		LM-5(35)	1
LFM-140	LDW280-54186	LM-4(34)	1
LM	LDW280-53186	LM-3(33)	1

PART NO.
LDW280-10827-29

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23882	LTA-8(18)	2

PART NO. LDW280-10827-23

LDW280-10827 A

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28178	LM-2 (32)	1
LM	LDW280-28178	LM-1 (31)	1
LM	LDW280-28178	LTA-8(18)	1

PART NO.
LDW280-10827-15,-19

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28892	LTA-8(18)	4

PART NO. LDW280-10827-21

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LFM-126	LDW280-28178	LTA-8(18)	1EA
LM	LD280-28178	LTA-8(18)	1EA

PART NO.
LDW280-10827-17-1 & -27

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LFM-126	LDW280-28178	LTA-8(18	1EA
LM	LDW280-28178	LM-2 (32)	1EA.
LM	LDW280-28178	LM-1 (31)	1EA.
LM	LDW280-28178	LTA-8 (18)	1EA.

PART NO. LDW280-10827-11, & -13

GAEC SCH NO. 30

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10		2.00	3.00					
REV	A	A		A	A					
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO. A	
		PRIM NO.	JK(001)
LAST DASH NO. USED	-29	215	MP-164 5/25/68

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1/2

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9 1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	GIELAK MACAULAY 5-12	RELIABILITY	
LAYOUT BY	S.SIDMAN 5-17-66		
CHECKED BY	EG. 5-16-66		
GR LEADER			
VEH DES INT	5/19		
STRUCTURES	5/23	PROJ ENGR	Plunkett 2 June 66
STRUCTURES	5/23	REL GROUP	Butts 6-6-66
WEIGHTS			

® GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE-CABIN-THERMAL SHIELD

SIZE	CODE IDENT NO.		
B	26512	LDW280-10827	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

REV A CDK 5-15-68

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~[illegible]~~ APPD
A	1	3.00,1.00,2.00						EO A1	ADDED -21 & -23 ADDED SH 1.10	LTA-8(18)	NOT	REQD	BOGARDUS 12-27-67		
	2	3.00,1.00 & 200						EO A2	ADDED -25 FOR LM-3 THRU LM-15	LM-3(33) THRU LM-15(45)	NOT	REQD			
	3	100						LE0280-427	ADD LM-3 THRU LM-15 REQUIREMENTS FOR -17						
	4	3.00,2.00 & 1.00					✓	EO A4 LCD923	IN F/D TRIMMED -17 IN F/D & B/M & M/B CREATED -27 N/A LDW280-28178, EFF, LTA-8 ONLY	LTA-8(18) LM-1(31) THRU LM-15(45)	✓				
	5	3.00,2.00 1.00					✓	EO A5	REF EO A4 CREATED -17-1. REMOVED FROM -17, LTA-8 EFF.	LTA-8(18)	✓				
	6	3.00,2.00 1.00				✓		EO A6 LCD 1069 CCA 553	REMOVED -17	LM-1(31) THRU LM-15(45)		-17			
	7	3.00,2.00 1.00					✓	EO A7	CREATED -29, REMOVED -25	LM-3(33) THRU LM-15(45)		-25			
	8	3.00					✓	EO A8	IN F/D & BM TRIMMED SHADED AREA ON -13	LM-2(32)	✓		H.D.		
	9	1.00 1.10		LFM-140		✓		LE0280-919 LCD2360	IN MOD/BLK: REVISED NEXT ASSY LDW280-54186 FOR -29	LM-4 THRU LM-15	NOT	REQD	SCHWETER 5.14.68 A.S		
	10	1.00 1.10		LFM-126		✓		LCD1021-33	ON -11, -13, -17-1 & -27 ADDED END ITEM LFM-126 REQ. A/O	LTA-8			RMS		

LTR	GROUP LDR	VDI	STRUCTURES	STRUCTURES	WEIGHTS	THERMO
A	5/3/68	5/10/68	5/13/68	for FEB		5-14-68

FOR CONTINUATION OF REVISIONS SEE SHEET

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10827	A
SCALE NONE			SHEET 1.10

ENG 77.3 5-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10827-29	E	ANGLE	AL. ALLOY SH	QQ-A-250/4	2024	.020×11 X 37	T3/T42	76	7A
		-27		ANGLE	AL. ALY CLAD SH	QQ-A-250/5	2024-T3	.040×2 × 2	NONE	88	5A
		-23		ANGLE	AL. ALLOY SH	QQ-A-250/12	7075	.028×2 5/8×7	T6	76	5B
		-21		ANGLE		QQ A-250/12	7075	.028 X 4 X15	T6	76	7B
		-19		ANGLE		QQ A-250/12	7075	.028X2 5/8X12 7/8	T6	76	5B
		-17-1		ANGLE		QQ-A-250/12	7075	.028X 5 X56	T6	76	7B
		-15		CLIP		QQ-A-250/12	7075	.050X1 7/8X2 3/4	T6	88	4E
		-13		ANGLE		QQ-A-250/4	2024	.020X 11 X36	T3/T42	76	7A
		LDW280-10827-11	E	ANGLE	AL ALLOY SH	QQ-A-250/4	2024	.020X2 3/8X26 7/8	T3/T42	76	8C

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	HEAT TREAT	MIL-H-6088
88	ANODIZE	LSP14-9030
76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10827	A

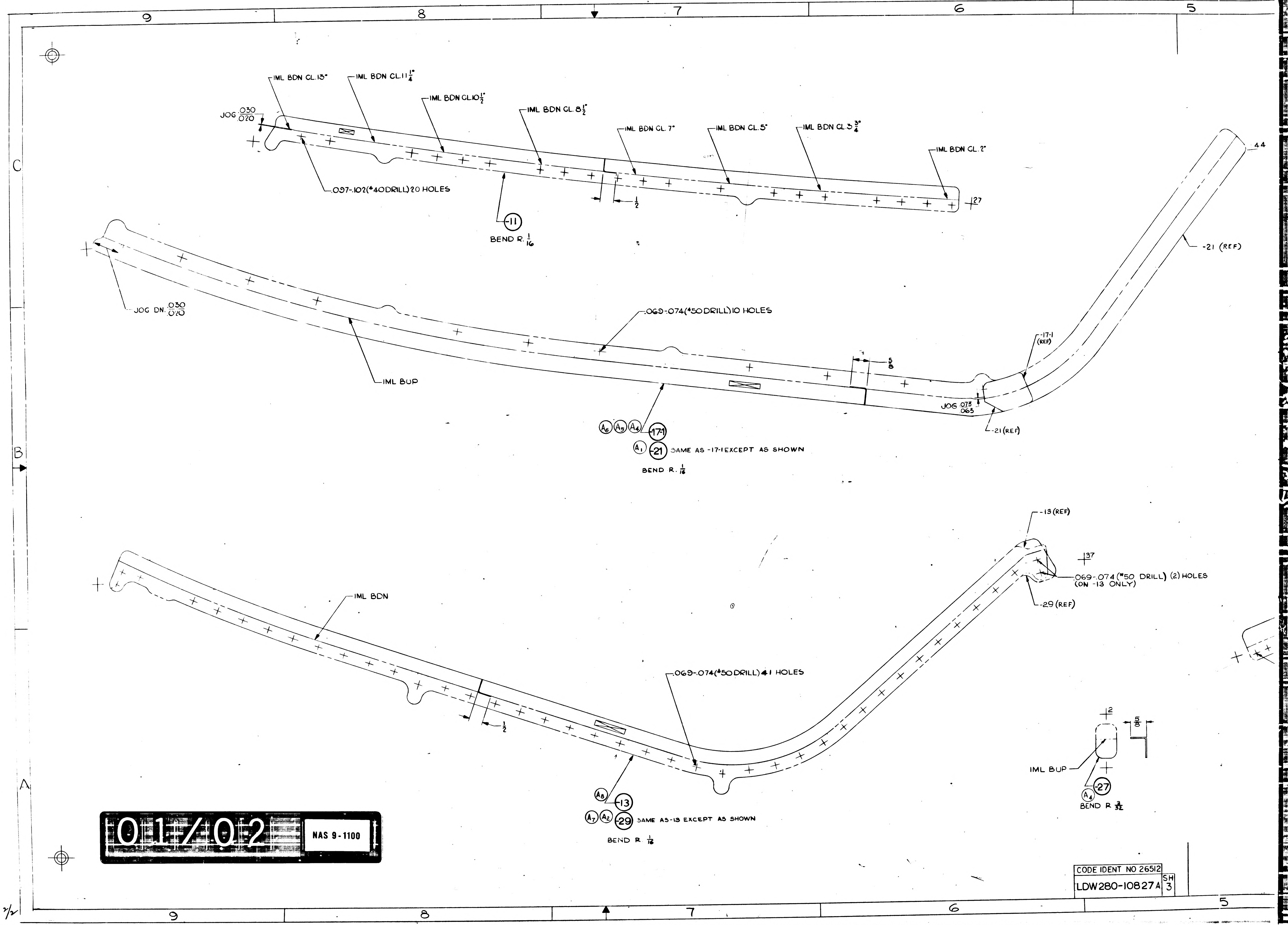
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

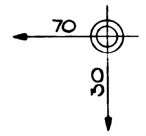
01

NAS 9-1100

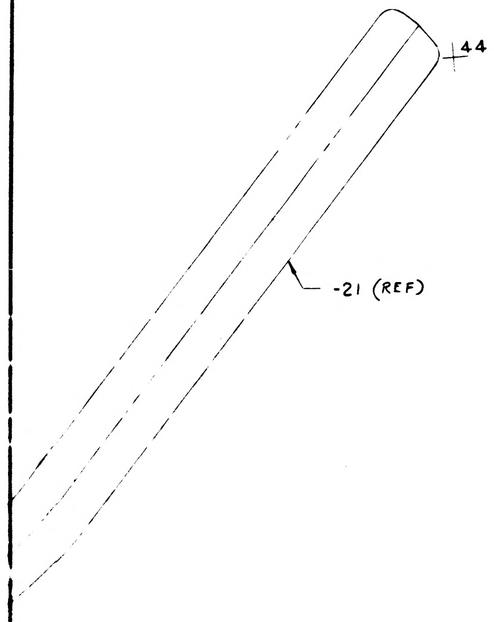

9
8
7
6
5
C
B
A
IML BDN CL.13°
IML BDN CL.11 1/4°
IML BDN CL.10 1/2°
IML BDN CL. 8 1/2°
IML BDN CL. 7°
IML BDN CL.5°
IML BDN CL.3 3/4°
IML BDN CL. 2°
JOG .030/.020
.097-.102(#40DRILL)20 HOLES
1/2
27
-11
BEND R. 1/16
44
-21 (REF)
JOG DN. .030/.020
.069-.074(#50DRILL)10 HOLES
5/8
-17-1 (REF)
IML BUP
JOG .073/.063
-21(REF)
A6 A5 A4 -17-1
A1 -21 SAME AS -17-1 EXCEPT AS SHOWN
BEND R. 1/16
-13 (REF)
37
.069-.074 (#50 DRILL) (2) HOLES (ON -13 ONLY)
-29 (REF)
IML BDN
.069-.074(#50DRILL)41 HOLES
1/2
A8 -13
A7 A2 -29 SAME AS -13 EXCEPT AS SHOWN
BEND R 1/16
2
5/8
IML BUP
A4 -27
BEND R 3/32
2/2

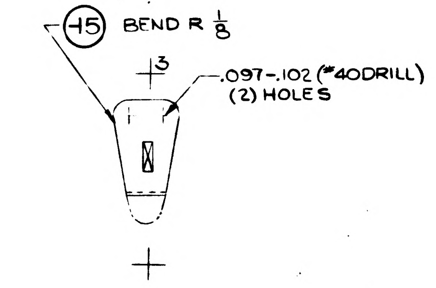
01/02 NAS 9-1100

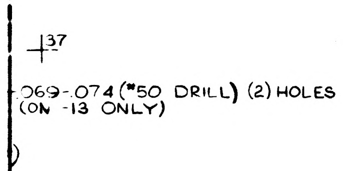
CODE IDENT NO 26512
LDW280-10827A SH 3

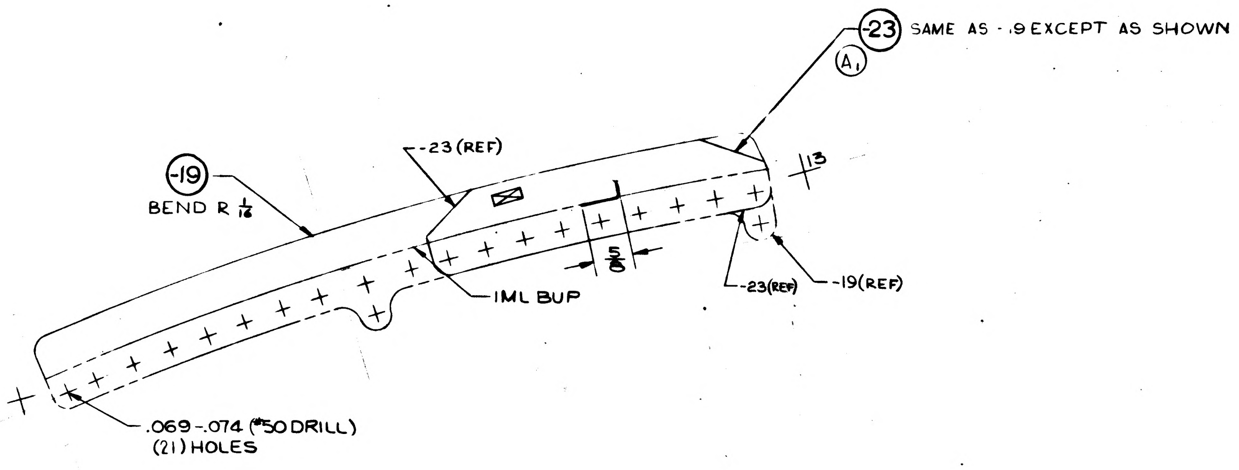


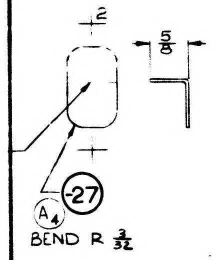
NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS




-15 BEND R 1/8
3
.097-.102 (#40 DRILL)
(2) HOLES


37
.069-.074 (#50 DRILL) (2) HOLES
(ON -13 ONLY)


-23 SAME AS -19 EXCEPT AS SHOWN
A1
-23 (REF)
-19
BEND R 1/16
13
5/8
IML BUP
-23 (REF)
-19 (REF)
.069-.074 (#50 DRILL)
(21) HOLES


2
5/8
A4
-27
BEND R 3/32

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ [redacted].	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 34 X 88

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 99) = 25 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 6.5 SQ. FT.
PRINT TRIM LINE

C
B
A

LDW280-10827A

LDW280-10827A

02/02

NAS 9-1100

CODE IDENT NO 26512
LDW280-10827A SH 3

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK				
	SIZE J	CODE IDENT NO. 26512	LDW280-10827	A	(A)
LEM					
MODEL OR END ITEM	SCALE FULL			SHEET 3.00	

K2

FOR PHOTO REPRODUCTION

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10827
EO NO. B1
CONTROL INFO NO. LDW280-B3763

IN M/B
END ITEM
ADD: LFM 126, LTA-8 EFFECTIVITY TO
LDW 280-10827-23. N/A LDW 280-28882, 2 REQ'D

LFM

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD 1021-33 (5)

REASON FOR EO: ADDITIONAL REQ'M'TS PER LCD 1021-33

DESCRIPTION OF EO: IN M/B ADDED LFM 126 REQ'M'T. FOR LDW 280-10827-23.

GAEC EO RELEASE: JK 6/12/68

MODEL	~~PROCURING ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 126	LTA-8 (13)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO ☐

DISPOSITION OF PARTS: REWORK NOT SCRAP REQ'D

APPROVED BY								
DATE	6/3/68	6-6-68		6/3/68	6/7/68		6/7/68	6-11-68
	VDI	~~SUPPORT~~ THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~[illegible]~~

PRIORITY: C
DRAWING TITLE: ANGLE - A/S - CABIN - THERMAL SHIELD
DRAWING NO.: LDW 280-10827
EO NO.: B1

061268
ISSUED BY EE PABST (X7033) SECTION VD1 GROUP NO. 335 PL 25

01

NAS 9-1100

ENG 22.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 1072
CONTROL INFO NO. LDW280B-4403

REVISE ~~S/B~~ LM-4(34) N/A S/B LDW280-53186
WAS N/A LDW280-54186 FOR THE FOLLOWING DWGS & DASH NO.

DWG. NO.	DASH NO. *	N/A FOR LM-4(34)	N/A FOR LM-5(35) THRU LM-15(45)	CHG. NO.
LDW280-10743	-11, -17 -43	LDW280-53186	LDW280-54186	H4
-10823	-27			D3
-11291	-19, -20, -33			D2
-11732	-11, -15, -17, -19 -31, -23, -25, -27			B2
-11733	-11, -13 -15 -21, -23, -29			A6
-11734	-17			A6
-11738	-5, -7, -9 -31, -37, -39			D2
-11800	-15, -17			A8
-11801	-13, -15, -17 -21, -23			A4
-10827	-29			B2
-11814	-15, -17			A4
LDW280-11816	-11, -17, -19 -13, -15	LDW280-53186	LDW280-54186	A4

END ITEM & NO. REQD/MOD SAME AS LM-3 (33)

LFM

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD 2360 PKG 32 SH 2 & 3 (5)

REASON FOR EO: UPDATED LM-4 (34) REQ.

DESCRIPTION OF EO: FOR * REVISED EFF. (LM-4), NEXT ASSY. LDW280-53186
WAS LDW280-54186

GAEC EO RELEASE: JK 7/30/68

MODEL	~~PROCURING ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM140	LM-4(34)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK: HOT | SCRAP: REQD

APPROVED BY / DATE:

VDI	~~SUPPORT~~ THERM	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
7/1/68	7/12/68		7/10/68			7/13/68

PRIORITY: C
DRAWING TITLE: SEE DWG.
DRAWING NO.: LEO 280
EO NO.: 1072

07-15-68
ISSUED BY H. TREFFEISEN x7033 SECTION VDI GROUP NO. 335 PL 25

01
NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

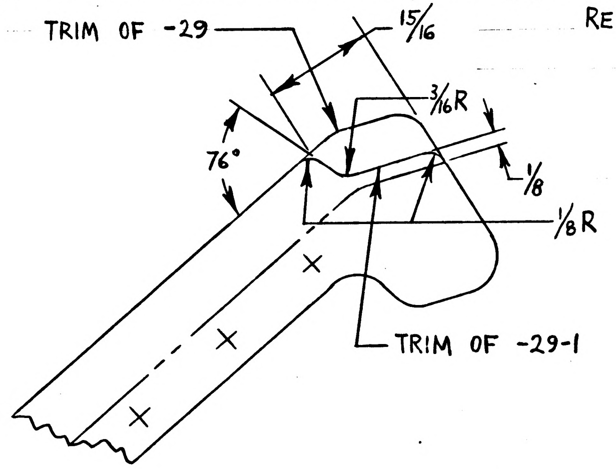
ENGINEERING ORDER

DWG. NO. LDW280-10827		EO NO. B3
CONTROL INFO NO. LDW280B6542		

IN F/D & B/M ADD -29-1, SAME AS -29 EXCEPT TRIM CHANGED AS SHOWN BELOW.

IN M/B FOR -29-1 ADD: N/A LDW280-54186, LM-6(36) THRU LM-15(45), 1 REQD/MOD.

RESTRICT -29 TO LM-3 THRU LM-5 EFF.
WAS LM-3 THRU LM-15.



SWIP

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 3179 PKG. 5

REASON FOR EO: TO ELIMINATE INTERFERENCE WITH BLIND NUT ON ADJACENT SHIELD INSTL.

DESCRIPTION OF EO: RESTRICTED EFFECTIVITY OF -29 TO LM-3 THRU LM-5 BY REMOVING LM-6 THRU LM-15 EFF. IN F/D, B/M & M/B ADDED -29-1.

GAEC EO RELEASE: 15 12/20

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-6(36) THRU	
		LM-15(45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG	RECORD EO	REWORK	SCRAP
✓		✓	

APPROVED BY		MIR						Bauman
DATE	12/13/68	12/16/68		12/13/68	12/16/68		12/20/68	12/26/68
	VDI	~~SUPPORT~~ THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	ANGLE ASCENT STAGE CABIN THERMAL SHIELD	LDW280-10827	B3

12-30-68
ISSUED BY F. SHANLEY 7033 SECTION VEH. DESIGN INT. GROUP NO. 335 PL 25

01 NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53186	LM-15(45)	1 EA
		LM-14(44)	1 EA
		LM-13(43)	1 EA
		LM-12(42)	1 EA
		LM-11 (41)	1 EA
		LM-10(40)	1 EA
		LM-9(39)	1 EA
		LM-8(38)	1 EA
		LM-7(37)	1 EA
		LM-6(36)	1 EA
		LM-5(35)	1 EA
		LM-4(34)	1 EA
	LDW280-53186	LM-3(33)	1 EA
	LDW280-28178	LEM-2(32)	1 EA
	LDW280-28178	LEM-1(31)	1 EA
LM	LDW280-28178	LTA-8 (18)	1 EA
PART NO. LDW280-10828-23-25		GAEC SCH NO. 30	

LDW280-10828 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW230-53186	LM-15(45)	1
		LM-14(44)	1
		LM-13(43	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
		LM-4(34)	1
LM	LDW230-53186	LM-3(33)	1
PART NO. LDW280-10828-29		GAEC SCH NO. 30	

LM	LDW280-28178	LM-2(32)	1 EA
LM	LDW280-28178	LM-1 (31)	1 EA
LM	LDW280-28178	LTA-8(18)	1 EA
MODEL	NEXT ASSY	MODULE	
PART NO LDW280-10828-15-19-21-27 & -27-1			

LM	LDW280-28178	LM-2(32)	2
LM	LDW280-28178	LM-1(31)	2
LM	LDW280-28178	LTA-8(18)	2
MODEL	NEXT ASSY	MODULE	
PART NO. LDW280-10828-13			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28178	LEM-2(32)	4
LEM	LDW280-28178	LEM-1(31)	4
LEM	LDW280-28178	LTA-8(18)	4
PART NO. LDW280-10828-11		GAEC SCH NO. 30	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -29

GRUMMAN REF INFO A

PRIM NO. (E/001) 215 MP 5A 3/27/7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES
± 1/32 ± .020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM* 1
DOCUMENTATION TYPE II

DRAWN BY	T.MACAULAY 5-10-66	RELIABILITY	
LAYOUT BY	S SIDMAN 5-16-66		
CHECKED BY	EG 5-13-66		
GR LEADER			
VEH DES INT			
STRUCTURES	5/17	PROJ ENGR	/EMC 5-22
STRUCTURES	5/17	REL GROUP	5-31
WEIGHTS	5-22		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE~CABIN-THERMAL SHIELD

SIZE	CODE IDENT NO.		
B	26512	LDW280-10828	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

01 NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET

RETRACED SH 3.00 NO CHG- LAST REV N.C. W.CONROY 3-23-67

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00 2.00 3.00						EO A1	REMOVED -17 ADDED -21 ADDED SH 1.10	LTA-8 LM-1 LM-2		-17	W. CONROY 3-23-67		
	2	1.00 2.00 3.00						EO A2	REMOVED -15, ADDED -21, -21-1, -23 & -25			-15			
	3	1.00 2.00 3.00						EO A3	REF EOA2, LDW280-10828 -27 & -27-1, WAS -21 & -21-1, RESPECTIVELY		NOT	REQD			
	4	1.00 2.00 3.00						EO A4	ADD -29 FOR LM-3 THRU LM-15	LM-3 THRU LM-15					
	5	1.00						LE0280-427	ADDED LM-3 THRU LM-15 REQUIREMENTS FOR -23 & -25						
	6	3.00						EO A6 Ⓡ	REF EO A4 (-29) REMOVED $1\frac{13}{32}$ 4S2						

CHG APPROVED												
LTR	GROUP LDR	VDI	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY						
A												

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10828	A
SCALE	NONE		SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10828-29	E	ANGLE	AL ALLOY SH	QQ-A-250/4	2024	.020X2X37	T42	76	
								↑ -27-1	↑	ANGLE	↑	↑	2024	.020X2X37	T42	↑	
								-27		ANGLE			2024	.020X2X37	T42		
								-25		SPACER		↓	2024-T3	.020X2X2	NONE	↓	
								-23		CLIP		QQ-A-250/4	2024-T3	.020X2X3	NONE	76	
								-21		CHANNEL		QQ-A-250/12	7075	.032X3X3	T6	88	
								-19		CHANNEL		QQ-A-250/12	7075	.032X2 7/8X3	T6	88	
								-15		ANGLE		QQ-A-250/4	2024	.020X 2 X1 7/8	T3/T42	76	
								↓ -13	↓	CLIP	↓	QQ-A-250/12	7075	.028X 2 X2 1/2	T6	88	
								LDW280-10828-11	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.028X1 3/4X1 3/4	T6	88	

QTY PER ASSEMBLY

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	HEAT TREAT	MIL-H-6088
						76	ALODINE	LSP14-9010
						88	ANODIZE	LSP14-9030
						T42	HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

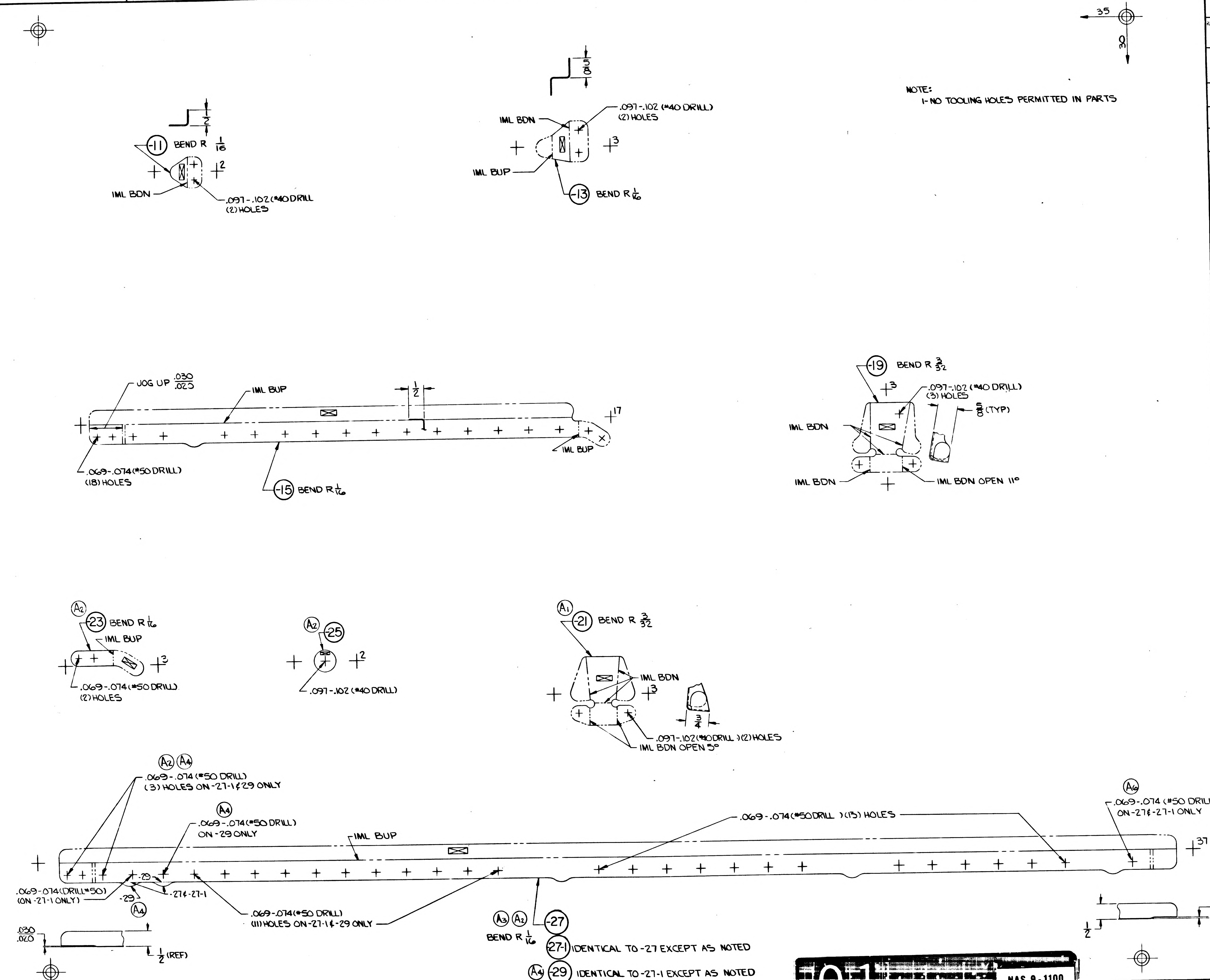
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10828	A
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



8
7
6
5
4
3
2
1
35
3
1
5/8
-11 BEND R 1/16
1/2
IML BDN
.097-.102 (#40 DRILL) (2) HOLES
2
IML BDN
.097-.102 (#40 DRILL) (2) HOLES
IML BUP
-13 BEND R 1/16
3
JOG UP .030/.025
IML BUP
1/2
17
.069-.074 (#50 DRILL) (18) HOLES
IML BUP
-15 BEND R 1/16
-19 BEND R 3/32
3
.097-.102 (#40 DRILL) (3) HOLES
5/8 (TYP)
IML BDN
IML BDN
IML BDN OPEN 11°
A2
-23 BEND R 1/16
IML BUP
3
.069-.074 (#50 DRILL) (2) HOLES
A2
-25
2
.097-.102 (#40 DRILL)
A1
-21 BEND R 3/32
IML BDN
3
3/4
.097-.102 (#40 DRILL) (2) HOLES
IML BDN OPEN 5°
A2 A4
.069-.074 (#50 DRILL) (3) HOLES ON -27-1 & 29 ONLY
A4
.069-.074 (#50 DRILL) ON -29 ONLY
IML BUP
.069-.074 (#50 DRILL) (13) HOLES
A6
.069-.074 (#50 DRILL) ON -27 & -27-1 ONLY
37
.069-.074 (DRILL #50) (ON -27-1 ONLY)
-29
-29
-27 & -27-1
A4
.069-.074 (#50 DRILL) (11) HOLES ON -27-1 & -29 ONLY
.030/.020
1/2 (REF)
.040/.030
1/2
A3 A2
BEND R 1/16
-27

NOTE:
1- NO TOOLING HOLES PERMITTED IN PARTS

-27-1 IDENTICAL TO -27 EXCEPT AS NOTED

A4 -29 IDENTICAL TO -27-1 EXCEPT AS NOTED

01 NAS 9-1100

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LM MODEL OR END ITEM	SIZE E	CODE IDENT NO. 26512	LDW280-10828	A
	SCALE FULL			SHEET 3.00

FOR PHOTO REPRODUCTION 1

LDW280-10828 A

R 42585

LDW280-10828

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28178	LEM-2(32)	1EA
LEM	LDW280-28178	LEM-1(31)	1EA
LEM	LDW280-28178	LTA-8 (18)	1EA
PART NO. LDW 280-10828-15-17&-19		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28178	LEM-2(32)	2
LEM	LDW280-28178	LEM-1(31)	2
LEM	LDW280-28178	LTA-8(18)	2
PART NO. LDW 280-10828-13		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28178	LEM-2(32)	4
LEM	LDW280-28178	LEM-1(31)	4
LEM	LDW280-28178	LTA-8(18)	4
PART NO. LDW 280-10828-11		GAEC SCH NO. 30-	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REF INFO			
LAST DASH NO. USED	-19	PRIM NO. 215	CE/001 MP1		JR 5-17

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ± .020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM* 1
DOCUMENTATION TYPE II

DRAWN BY	T.MACAULAY 5-10-66	RELIABILITY	
LAYOUT BY	S.SIDMAN 5-16-66		
CHECKED BY	EG 5-13-66		
GRLEADER			
VEH DES INT	5/16		
STRUCTURES	5/17	PROJ ENGR	RMC 5-22
STRUCTURES	Alderman 5/17	REL GROUP	5-31
WEIGHTS	5-23		

® GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE~CABIN-THERMAL
SHIELD

SIZE	CODE IDENT NO.	
B	26512	LDW280-10828
SCALE NONE		SHEET 1.00 OF 3

ENG 77.1 12-65

01

NAS 9-1100

C

ENG 32 1 REV 3-66

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER EMF-A

DWG NO. LDW280-10828 | EO NO. B1
CONTROL INFO NO. LDW280A-6152

REMOVE FROM F/D, B/N. & M/B, -27-1 & -29
RESTRICT -23 & -25 TO LTA-8 ONLY

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 1069 CCA553

3

REASON FOR EO: TO ACCOMMODATE ADDITION OF PRESSURE CARTRIDGE CIRCUIT INTERRUPTER

DESCRIPTION OF EO: REMOVED -27-1 & -29. -23 & -25 RESTRICTED TO LTA-8

GAEC EO RELEASE: JK 5/4/7

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO	SUB CONTR UNIT NO
LM	LM1 (31)	THRU LM15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | REWORK

DISPOSITION OF PARTS: SCRAP -23, -25, -27-1, -29

	VDI	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
APPROVED BY	jap			F.W.R.	JV		Dam	
DATE	4/29/67			4/29/67	5/2/67		5/3/67	5-4-67

2

PRIORITY: C

DRAWING TITLE: ANGLE A/S CABIN THERMAL SHIELD

DRAWING NO. LDW280-10828 | EO NO. B1

ISSUED BY SALVADOR X7033 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW 280-10828
EO NO. C1
CONTROL INFO NO. LDW 280B 3961

IN M/B ON -25, DELETE LFM 126 REQ'TS
N/A LDW280-28178

LFM

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG ☑ LCD 1021-33 CCA 492 YK64

REASON FOR EO: DRAWING CORRECTION

DESCRIPTION OF EO: IN M/B ON -25, DELETED LFM 126 REQ'TS

GAEC (5) EO RELEASE: VK 6/22/68

MODEL	EFFECTIVITY ~~PROCURING ACTIVITY NO.~~ EI	~~GAEC~~ UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 126	LTA-8 (18)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK SCRAP ✓

APPROVED BY								
DATE	6/19/68	6-20-68		6/18/68	6/21/68		6/21/68	6-22-68
	VDI	THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY

DRAWING TITLE: ANGLE-ASCENT STAGE-CABIN THERMAL SHIELD

DRAWING NO. LDW280-10828

EO NO. C1

ISSUED BY R. SMALL x86048 6/17/68 6-24-68 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

REVISIONS

CHANGE	ITEM NO.	SHEET NUMBER	SH CHG LTR	GRUMMAN INFO ONLY DCRF OR ECP	DET. SPEC.	CLASS I	CLASS II	ENGRG ORDER IBCC NO.	DESCRIPTION	EFFECTIVE ON MILITARY NUMBER	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1,4 & 7						EO A-1 ⑦	To par, F added note #10. To par H,4.a inserted between words "simultaneously" & "fabricate" or self contained--- Press production	NOTED	✓		7-8-66		

MODEL	EFFECTIVITY	NEXT ASSY
LEM	HR-3 (DVT)	LDW280H23143
LEM	LEM-3(33),-4(34)	LDW280H23143
LEM	-5(35),-6(36)	LDW280H23143

PART NUMBER

GAEC SCH. No. 35-

REQD PER APL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED:
FRACTIONS – DECIMALS – ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

GRUMMAN REL INFO A
215 VE(001)
MP 7/21/6 A

DRAWN BY	J. Furey
LAYOUT BY	
CHECKED BY	R.A. Bracco
GR LEADER	3/1/66
~~STRUCTURE~~ VDI	3/3
STRUCTURE	JV 3/15
WEIGHTS	DJ 3-16
S.T.P. SYSTEMS PROCEDURES	FT-V
PROJ ENGR	3/23/66
~~GOVT~~ APPD RELEASE	3-24-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

3

FABRICATION PROCEDURE

ASCENT STAGE M/S - RCS HE MODULE LDW280H23143

CONTRACT NO. NAS 9-1100 DOCUMENTATION TYPE II

CODE IDENT NO.	SIZE		
26512	B	LDW280-10830	A

SCALE LINE ITEM 1 SHEET 1 of 10

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D. Adhesive Film Application

Apply FM-1000 adhesive film between all surfaces to be bonded.

NOTES:

1. The primer may be warmed with a low temperature heat gun to provide some tack of the adhesive film to the details.
2. Do not attempt to heat the film. The application of heat sufficient to soften the film will tend to cure the material.
3. Do not tack the film with the liquid primer. The volatiles in the primer will cause voids in metal-to-metal joints and film bubbling in a sandwich bond.

E. Assembly of Detail Parts

1. Assemble the details as indicated on drawing No. LDW280H23143.
2. Pull the edges of the core to make contact with the adhesive film at the core edges. Do not attempt to heat tack the film adhesive.

F. Bonding of Assembly

1. Locate thermocouples on the assembly as indicated on the Process Bonding Cycle Card.
2. Position open weave glass fabric over the assembly.
3. Bag and seal with mylar or nylon film and Presstite 155 tape or equivalent.
4. Place fixture with a Quality Control panel (see Para. G.) in the autoclave and check bag seal with vacuum.

NOTE:

Full vacuum may be used but it must be decreased to 5 psi prior to applying air pressure in the next step.

5. Apply 5-15 psi air pressure and vent part to the atmosphere.
6. Apply pressure indicated on the bonding cycle card and raise temperature of assembly to 330°F within 90 minutes.

NOTE:

If the heat up procedure cannot be completed within 90 minutes the assembly should be considered to have a minor discrepancy and acceptance of the bonding cycle should depend on satisfactory test results from the Quality Control specimens. If the assembly cannot be brought to temperature within 120 minutes it should be held for Material Review Board disposition.

7. Cure the assembly at 340°F $^{+10°F}_{-10°F}$ for 60 $^{+10}_{-0}$ minutes under the pressure indicated on the bonding cycle card.
8. Cool to 150°F under the specified pressure.
9. The requirements that follow shall apply to the above bonding cycle.

NOTE:

10. For bonding in platen press steps 1,6,7,8 & 9 from above procedure shall apply.

EFFECTIVITY	DESCRIPTION	GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., N. Y.			
		CODE IDENT NO. 26512	SIZE B	LDW280-10830	A
		SCALE		SHEET 4	

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e. Within any 8" length of core splice or edge bond, there shall be no more than 20% unbonded kength except that any individual unbonded length shall not exceed 1/2".

f. The inspection record obtained in Section G, Paragraph 3c shall be used in conjunction with the records of this section to differentiate between apparent delaminations and actual delaminations.

4. a. With each lot of parts bonded in the autoclave simultaneously or self contained bonding fixture and for each 24 hours of platen press production fabricate a 10" x 17½" test panel per Figure II and a 6½" x 7½" test panel per Figure I. Identify the panels with the production parts and submit the panels to the Quality Control Laboratory for testing. Suitable test records shall be maintained by the Quality Control Laboratory.

b. The 10" x 17 1/2" panel shall be cut into 3" x 17 1/2" panels as shown in Figure II. Two 3" x 17 1/2" panels when long beam shear tested as shown in Figure III shall equal or exceed the specified value of 1372# min.

c. The third 3 x 17 1/2" panel when tested on each side in the climbing drum peel tester per MIL-STD-401A shall equal or exceed 100 in.#/3 in. width minimum average, with no single value below 80 in. #/3 in. width.

I. Test Requirements - Completed Assembly (Refer to LPC-905-44003B)

1. P/N LDW280H23143-1.

a. Assemblies to be subjected to a proof load test in accordance with LPC-905-44003B. For criteria of acceptability refer to LPC-905-44003B.

EFFECTIVITY	DESCRIPTION	GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., N. Y.			
		CODE IDENT NO. 26512	SIZE B	LDW280-10830	A
		SCALE		SHEET 7	

SCOPE: Process and Assembly Procedure

REFERENCE: Drawing Number LDW280H23143
LSP14-7022A

EQUIPMENT & MATERIAL: FM1000 Adhesive System - MIL-A-5090D, Type I, Bloomingdale Department, American Cyanamid, Havre De Grace, MD.

Adhesive Film - FM-1000, .06 lbs/$ft.^2$

Adhesive Tack Primer - BR-1009-8

Aluminum Honeycomb Core - MIL-C-7438C - Source Hexcel Corporation, Havre De Grace, MD.
Honeycomb Corporation of America, Bridgeport, Conn.
American Cyanamid, Bloomingdale Department, Havre De Grace, MD.

ENVIRONMENTAL CONTROL: Bonding shall be performed in an area controlled within the range of 65°F to 95°F. The relative humidity of the area shall be maintained at 15 to 80%. The cleanliness of the area shall be carefully maintained.

PROCEDURE:

A. Assemble the tool and prefit the components. All surfaces to be bonded shall be free of burrs, dimples and waves and shall be prefitted so that only light pressure (1-2 psi) is required to give continuous contact of mating surfaces. The prefit must be completed prior to the cleaning of details for the bonding operation.

B. 1. Cleaning and Pretreatment:
  - (a) Aluminum Skins
    - (1) Remove all ink and stencil from the details by wiping with a safety solvent.
    - (2) The skins must be wired into racks that will preclude the possibility of scratches or "oil canning".
    - (3) Clean and pretreat the detail part in accordance with LSP14-7022, paragraphs 3.1.1 and 3.1.4 (indicate time and date of pretreatment on the route card).
  - (b) Degrease and dry honeycomb core in accordance with LSP14-7022, paragraph 3.1.1.

2. Primer application to sheet metal details.
  - (a) Spray the BR-1009-8 tack primer in one crosscoat on all of the surfaces to be bonded except core. Fluid adjustment on the gun should be such as to result in a wet film deposit. The coating shall be sufficient to provide complete coverage and shall not exceed 3 mils, dried film thickness.
  - (b) Allow the sprayed details to dry at ambient temperature for a minimum of 10 minutes.
  - (c) Force dry the primed details for 60^{+10}_{-0} minutes at 150°F ±10°F.

EFFECTIVITY	DESCRIPTION	GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., N. Y.		
		CODE IDENT NO. 26512	SIZE B	LDW280-10830
		SCALE		SHEET 2

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NOTES:

1. Stir primer thoroughly before use.
2. Indicate time and date of primer application on the route card.
3. The requirements that follow shall apply for adhesive application and handling.

ADHESIVE HANDLING - Apply the primer to the parts within 12 hours of cleaning.
All parts cleaned as per 3.1.1 and 3.1.4 of LSP14-7022 and B-1 of this drawing.

Clean white gloves shall be worn when handling cleaned parts. Cleaned parts requiring transportation or storage prior to the adhesive application shall be protected from contamination with clean Kraft paper, polyethylane film, or special container.

Clean white gloves shall be worn when handling adhesive film. All unused adhesives shall be returned to their containers and stored at proper temperatures as soon as possible. Contaminated or damaged adhesives and primers shall be discarded.

Where time allowances specified herein are exceeded, the assemblies shall be further processed or reprocessed under the cognizance of the Process Engineer.

Enter time and date of adhesive application on the route card for the component part. This entry shall be certified by Inspection.

Adhesive primed parts shall be handled with clean white gloves and force dried within 24 hours. Parts not bonded immediately after drying shall be stored in a clean, dry area where the temperature does not exceed 100°F and where the parts will be kept free from dust, dirt, oil, grease, wax or other foreign material. If necessary the parts may be wrapped in clean Kraft paper or polyethylene sheet in lieu of the clean dry area required above. Parts stored in excess of 30 days shall be visually inspected by Quality Control for contamination.

Where the core is undercut for edge members, strips of adhesive film shall be applied at the intersection of the edge of the member to the edge of the core prior to assembling skin.

The date and hour of cleaning and pretreatment of the adhesive application, and the batch and roll number of adhesive applied shall be noted on a suitable traveler identified with the assembly serial number.

EFFECTIVITY	DESCRIPTION

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

CODE IDENT NO.	SIZE	
26512	B	LDW280-10830
SCALE		SHEET 3

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CURING - GENERAL

1. The specific pressures used for each assembly shall be suitable for the nature of the part and be as specified by Manufacturing Engineering.
2. The adequacy of thermocouples shall be determined by bonding the first part using the designated bonding fixture under the conditions of temperature and pressure to be used in production. When satisfactory data is obtained and the necessary number of thermocouples determined, that number shall represent the requirement for use in production. The thermocouple temperature indicator, indicating the temperature of each unit by means of a selector switch, shall be closely observed. When the thermocouple with the lowest temperature reading reaches 330°F., the curing time shall begin. Temperatures shall be read for each thermocouple every 10 minutes during the bonding run. After removal from the bonding fixtures, parts shall be uniformly cooled to room temperature.
3. When positive pressure within the bag occurs during a non-vacuum autoclave bonding cycle above the abort temperature, continue the bonding cycle and take the following action as applicable.
   a. 0 to 4 psi, maximum - no action required.
   b. 4 to 7.5 psi, occuring 20 minutes or more after the specified cure temperature has been reached, hold the part(s) in abeyance pending the testing of the Quality Control panel. Acceptable test results shall constitute acceptance of the pressure portion of the cure cycle.
   c. More than 4 psi occuring prior to 20 minutes of elapsed cure time or more than 7.5 psi occuring during the bonding cycle, Material Review Board action shall establish the disposition of the part(s).

NOTE:

At no time shall the temperature exceed 350°F.

4. All metal-to-metal faying surfaces shall be structural adhesive bonded.

G. QUALITY ASSURANCE PROVISIONS

Quality Control shall be responsible for assuring compliance with this procedure.

1. Receiving
   (a) Each batch or lot of material required shall be inspected per Table I and identified on receipt.
2. Process Control
   (a) Panels processed in accordance with LSP14-7022 shall be laid up as shown in Figure I. Apply primer per note B.2 3/4" wide along one 6 1/2" edge of each panel. Use adhesive film between surfaces to be bonded and cure one hour at 340° ±10°F and 25 psi. Cool to 150°F before releasing pressure.
   (b) Panels, when shear tested by the Quality Control Laboratory shall equal or exceed a 5 specimen average of 6000 psi minimum, with no single specimen less than 5500 psi.

EFFECTIVITY	DESCRIPTION

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

CODE IDENT NO.	SIZE	
26512	B	LBW280-10830
SCALE		SHEET 5

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(c) Panels processed in accordance with LSP14-7022 shall be laid up as shown in Figure II. Apply primer per Note B.2to face sheets and use adhesive film between core and face sheets. Cure in platten press for one hour at 340°F and cool to 150°F before releasing pressure.

(d) Panels when peel tested by the Quality Control Laboratory in climbing drum peel tester per MIL-STD-401A shall equal or exceed a 3 specimen minimum average of 120 in.#/3 in. width.

(e) Panels shall be tested at a frequency to insure all adhesive is tested within 168 hours prior to use. Suitable test records shall be maintained by the Quality Control Laboratory.

3. Inspection of Core Detail

(a) Prior to preparation for assembly, the core details LDW280H23143-13 shall be subjected to a visual inspection to determine the locations and extent of core delamination, if any.

(b) Core details shall be considered acceptable for further processing if the above inspection shows that the core detail meets the requirements of Section H, Paragraph 3.

(c) A photographic or radiographic record of this inspection shall be made noting the locations and extent of actual core delaminations.

H. End Product Inspection

1. Each part shall be inspected for conformance to drawing LDW280H23143.

2. a. Ultrasonic Inspection shall be used for detection of unbonded areas.

b. Ultrasonic Inspection equipment shall be pulse-echo or resonance type. It shall be approved by the Grumman Quality Control Laboratory and operated only by personnel trained, qualified and approved by the Laboratory.

c. Equipment shall be calibrated immediately before use and checked every half hour during use against standard panels containing known voids.

d. Standard panels shall be prepared as shown in Figure IV using the same procedure as that given for the parts except voids shall be created by omitting adhesive and primer and substituting #181 glass cloth. Voids shall be indelibly marked on panel faces.

e. By use of stencils and layout dye each side of each part shall be marked with material thicknesses and the lines of demarkation between different thicknesses. These marks shall be removed at the conclusion of the inspection. The standard panels and the parts undergoing inspection shall be wiped clean with a lint free cloth to remove any contamination that could cause an erroneous reading. A coating of coupling medium shall then be applied. This medium shall not have a lubricating or mineral oil base and when removed at the conclusion of inspection shall leave no residual contamination.

f. Each part shall receive 100% inspection in metal-to-metal and honeycomb areas. Any part giving indication of a void shall be either rejected or submitted for Material Review Board action.

g. If a bonded assembly requires repair, the repaired area must be re-inspected in accordance with the foregoing procedure.

3. a. Each part shall receive 100% radiographic inspection.

b. Within an 8" diameter round normal to cell axis, the number of visible defects shall not exceed 9 delaminated or unbonded cells or cells with a node bond width of less than .070 with the further limitation that there shall be no more than 3 such cells adjacent on the same ribbon.

c. Within the same 8" round, there shall be no more than 45 partially delaminated cells (defined as having a node bond width of less than .080" but more than .070") with the further limitation that there shall be no more than 4 such cells adjacent on the same ribbon.

d. There shall be no crushed or split cell walls.

EFFECTIVITY	DESCRIPTION	GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., N. Y.			
		CODE IDENT NO. 26512	SIZE B	LDW280-10830	
		SCALE		SHEET 6	

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TABLE I

MATERIAL	PROPERTY	VALUE	TEST FREQUENCY	TEST METHOD
Aluminum Core (MIL-C-7438C) 3)	Dimensions Workmanship	Drawing Requirements	Each Piece	Optional
	Cell Size			Visual Mechanical
	Density	Drawing Requirements ±10%	1)	Measure and weigh. Divide weight by volume.
	Compression Flatwise	MIL-C-7438C	1)	MIL-C-7438C
	Core Delamination	12.5 pounds	1) 2)	MIL-C-7438C
Adhesive Primer BR-1009-8	Non Volatile Content	20% ±1	Each Lot	Weigh suitable container. Place 3 to 4 1/2 grams of primer in container and weigh. Heat at 180°F for 1 hour breaking (±2°F) any skin formed during baking. Cool and reweigh. % Non-volatile = cured weight over original weight X 100
	Standard Temperature Shear	1 specimen min. 5500 psi 5 specimen average 6000 psi min.	Each Lot	Prepare specimen per G-2(a). Test per MIL-A-5090D.
FM 1000 Film	Uncured Film Weight	.060 ±.005 lbs. ft.^{2}	Each Lot	Weigh two 3 x 3 pieces of film $\frac{\text{wt. of uncured film x 16}}{454}$ = Cured film weight lbs/ft.
	Standard Temperature Shear	1 specimen min. 5500 psi 5 specimen average 6000 psi	Each Lot	Prepare specimen per G-2(a). Test per MIL-A-5090D
	Standard Temperature Peel	3 specimen min. Average 120 in. #/3 in.	Each Lot	Prepare panels per G-2 -C and test per MIL-STD-401A.

1) Each batch lot, or at the discretion of the Quality Control Laboratory, an approved sampling plan per MIL-STD-105A shall be used for Test Frequency.
2) Core Delamination Tests need not be performed on Hexcel Co. core.
3) Suitable test records shall be maintained by the Quality Control Laboratory.

NOTE: Where any of the foregoing tests require the use of material other than those being tested, they shall be from a previously qualified lot.

EFFECTIVITY	DESCRIPTION

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

CODE IDENT NO.	SIZE	
26512	B	LDW280-10830
SCALE		SHEET 8

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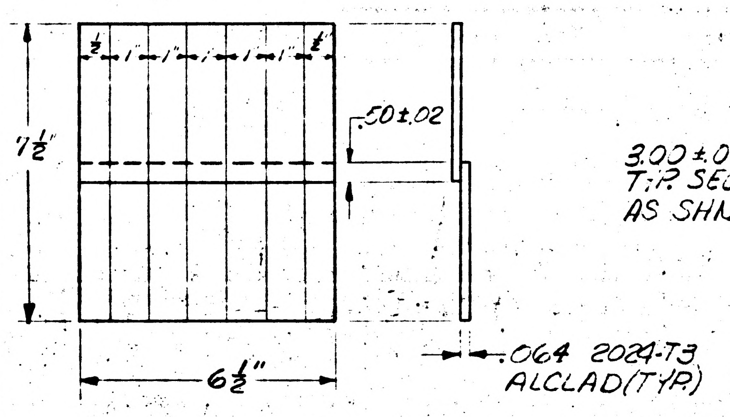
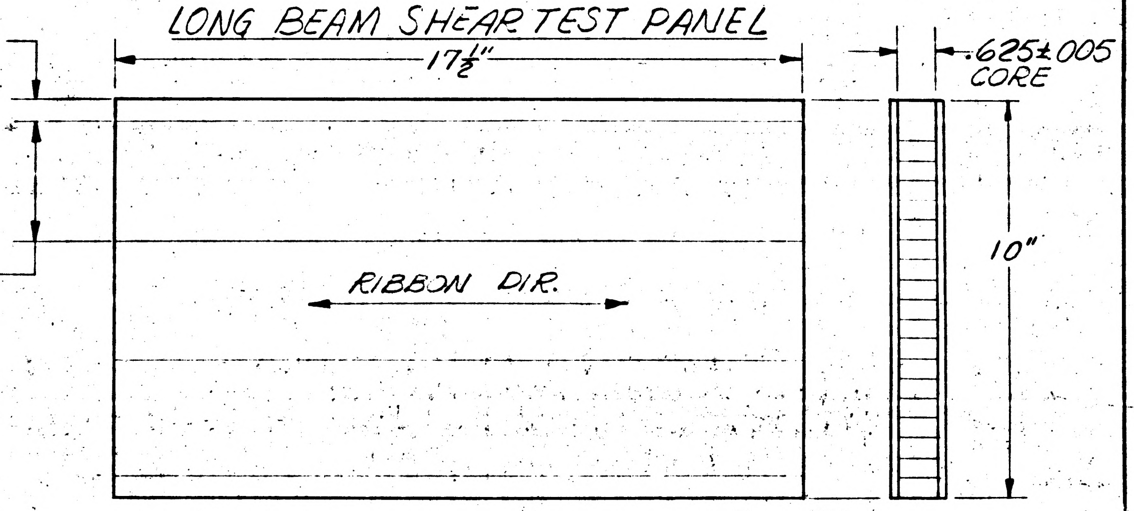
TENSILE TEST PANEL



1/2
1
1
1
1
1
1/2
.50±.02
7 1/2"
6 1/2"
.064 2024-T3
ALCLAD(TYP.)

FIG. I

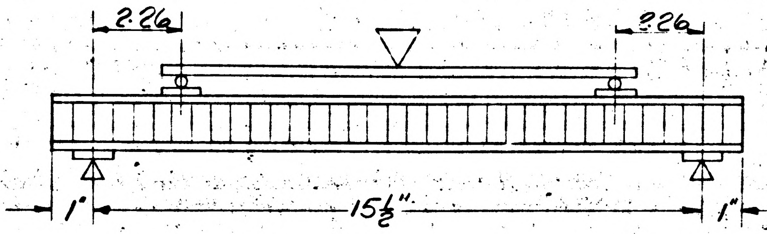
LONG BEAM SHEAR TEST PANEL



1/2 (TYP.)
3.00±.02
TYP SECT.
AS SHN.
17 1/2"
RIBBON DIR.
.625±.005
CORE
10"

FIG. II

LONG BEAM SHEAR TEST
PER MIL-STD-401A



2.26
2.26
1"
15 1/2"
1"

FIG. III

CORE MATERIAL	FACING MATL.	TEST VALUE (MIN. LBS)
6.0-1/4-30N(5052)	.020-7075-T6 ALCLAD	1372

EFFECTIVITY	DESCRIPTION

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

CODE IDENT NO. 26512
SIZE B
LDW280-10830
SCALE NONE
SHEET 9
R.A.B.

ENG 396

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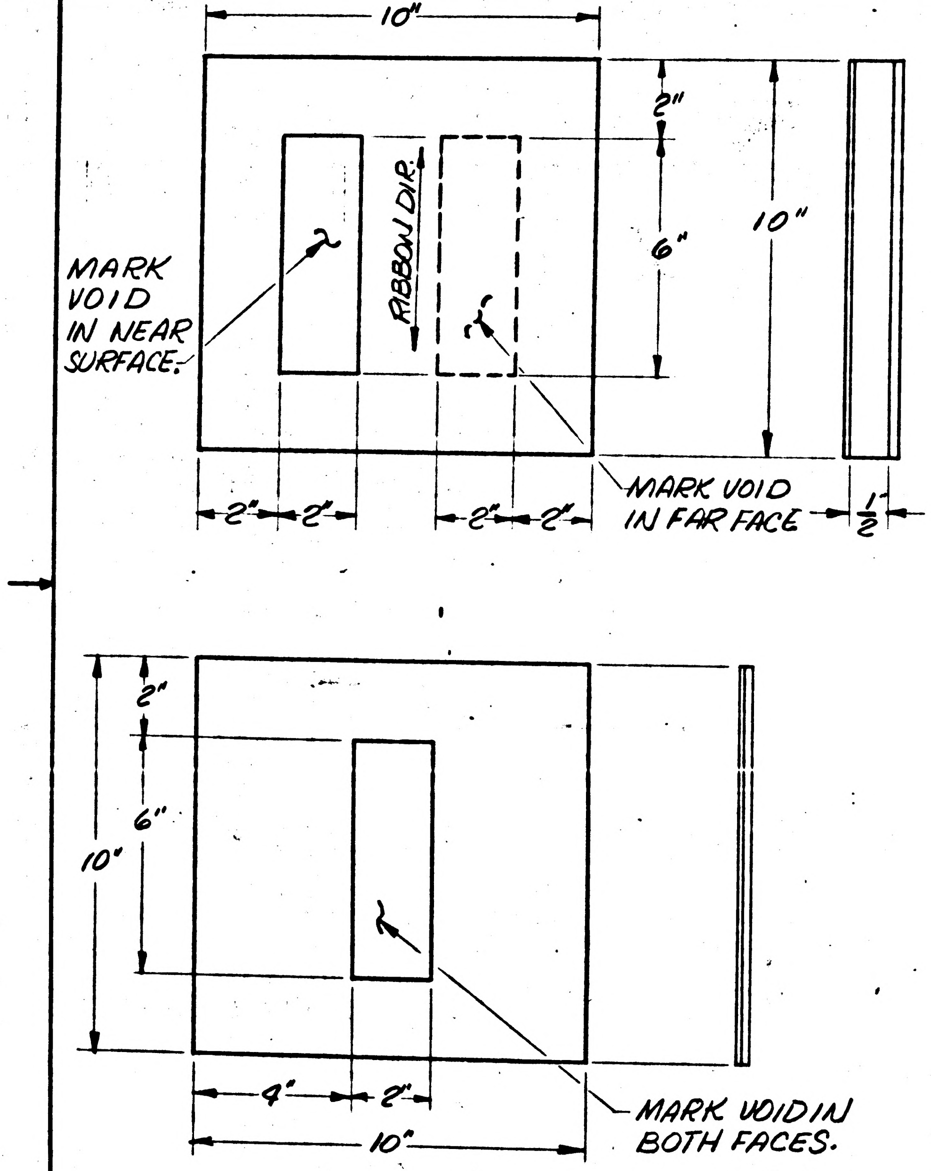

10"
2"
6"
10"
RIBBON DIR.
MARK VOID IN NEAR SURFACE.
MARK VOID IN FAR FACE
2" 2" 2" 2"
1/2"
2"
6"
10"
4" 2"
10"
MARK VOID IN BOTH FACES.

FIG. IV

ULTRA SONIC STD. PANELS.

NOTES:

1- SKINS SHALL BE SAME MATERIAL AND ALLOY AS THE SECTION REPRESENTED.
  a- FOR RESONANCE METHOD, THICKNESS SHALL BE WITHIN ±.003 OF ACTUAL THICKNESS OF PART.
  b- FOR PULSE-ECHO METHOD, THICKNESS SHALL BE WITHIN A 3 TO 1 RATIO.
2- CORE SHALL BE SAME DENSITY AND MATERIAL AS THE SECTION REPRESENTED.
3- METLBOND 329 ADHESIVE SYSTEM IN ACCORDANCE WITH THIS PROCEDURE DWG.
4- MARK EACH FACE WITH ADHESIVE SYSTEM, CORE DENSITY, NEAR FACE THICKNESS (IN THOUSANDTHS), & FAR FACE THICKNESS (IN THOUSANDTHS), IN THAT ORDER.

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.
CODE IDENT NO. 26512
SIZE B
LDW 280-10830
SCALE NONE
SHEET 10

ENG 203

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 526
CONTROL INFO NO. LDW280 A5914

TO THE FOLLOWING DRAWINGS LISTED BELOW & THEIR DASH NUMBERS * THAT ARE EFFECTIVE ON LM-6(36) ADD EFFECTIVITIES FOR LM-7(37) LM-8(38), LM-9(39), LM-10(40), LM-11(41), LM-12(42), LM-13(43), LM-14(44), LM-15(45). QUANTITIES & N/A REMAIN THE SAME AS LM-6(36.)

DRAWING No.	DASH No*	CHG. NO.	TITLE	NEXT ASSY
LDW280-10245	-17, -19	C4	ANGLE CAB. L.H WIND	LDW280-23074
-10261	-13,-15,-17,-19,-20	C1	CHAN M/S BEAM	-54030
-10300	-13, -15	D2	CLIP RH ZO FRM LWR	-54020
-10310	-15	D1	CHAN CAB. WIND AKEM	-23074
-10380	-15	C1	SHIM FWD HATCH HINGE	-54083
-10561	-11	A1	WEB M/S ENG SPT. FWD	-23077
-10702	-17	A1	DBLR DOCK TUN.	-23069
-10830	ULTRA SONIC STD. PANELS	B1	FAB. PROC-RCS-HE MDD	H23143
-10833	-11, -13, -15	B2	WEB ECS HEAT EX. SPT	-23253
-10904	-11, -13, -17	C3	SUPT IMU BEAM WIRING	-23031
-23168	-1, -3, -5 & -7	A2	HATCH ASSY DOCK TUNNEL	-23069
M23139	-1	B1	VEE ASSY CAB NVP-LAP	-23066
-11066	-11, -12	A1	CLIP S BAND ANTENNA	-23246
-11110	-11	C1	FTG AEB CAGE STRUT	-23039
-11117	-17, -19	B1	CHANNEL X253 DECK	-23029
-11117	-11, -13 & -15		CHANNEL X253 DECK	-53476
-11159	-15, -17, -18	B2	[illegible] SHIELD X253.5	-53476
-11191	-11	C1	SUPT F.F. EQUIP LINES	-54075
-11351	-1 & -3	B2	BRACKET ASSY	-23488
-53078	-1	A7	BEAM INSTL MS 210.25	-54012
H23903	-5	C4	SKIRT ASSY OXID	LDW280-23901
M10555	-1, -2	A1	CLIP LONGERON CABIN	-23048
-28753	-1	A4	SKIN ASSY DS SC	-28750
-23066	-1	B4	FR IN CAB NA BHS SUP	-54002
-23511	NONE	B3	JIG DATA-REF DWG.	NONE
M11108	-1	B1	BOLT ZO R.H SHIELD SUPT	-51199
-25709	-1	A2	SHIELD INSTL DS EC	-25661
-28362	-3	A2	STRAP ASSY CABIN	-54357
-28645	-3	A2	ACCESS COV INST PLSS	-54553

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

3

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
ADDITIONAL REQUIREMENTS	FOR DASH * ADDED LM-7(37) THRU LM-15(45) EFF.	Ⓡ JK 3/27/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
LM		LM-7(37) THRU	LM-15(45)	✓		NOT REQD	

APPROVED BY		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
DATE	3/16/67			—	3/20		3-23-67	3/24/67
6	VOI							

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	NOTED	LEO 280	526

ISSUED BY A. MAICA X1392 SECTION VEH. DES. INTRE GROUP NO. 535 PL 35

01 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10830
EO NO. B2
CONTROL INFO NO. LDW280B1665

ADD N/A LDW280H23143 EFFECTIVITY PA-1(47) TO M/B.

DETAIL SPEC REQ	✓	CL II ENGRG CHG		CL I ENGRG CHG	(LCR 2019)

REASON FOR EO: LM TEST REQUIREMENTS (CDR LIST)

DESCRIPTION OF EO: TO M/B ADDED N/A LDW280H23143 FOR EFF PA-1(47).

GAEC EO RELEASE

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		PA-1 (47)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		NOT REQD	

APPROVED BY					cw			
DATE	1/31/68			1-23-68	1-25-68		1/31/68	1-31-68
	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: C

DRAWING TITLE: FABRICATION PROCEDURE AS MS RCS HE MODULE LDW280H23143

DRAWING NO.: LDW280-10830

EO NO.: B2

ISSUED BY D.R. BEITLER X1153 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28253	LM-3㉝	1
LM	LDW280-28253	LM-2㉜	1
PART NO. LDW280-10832-23			
LM	LDW280-23253	LM-15㊺	1
	↕	THRU	
LM	LDW280-23253	LM-4㉞	1
PART NO. LDW280-10832-27			
LM	LDW280-23253	LM-15㊺	1
↑	↑	LM-14㊹	1
		LM-13㊸	1
		LM-12㊷	1
		LM-11㊶	1
		LM-10㊵	1
		LM-9㊴	1
		LM-8㊳	1
		LM-7㊲	1
	↓	LM-6㊱	1
	LDW280-23253	LM-5㉟	1
	LDW280-23253	LM-4㉞	1
↓	LDW280-28253	LM-3㉝	1
LM	LDW280-28253	LM-2㉜	1
PART NO. LDW280-10832-21		GAEC SCH NO.	

LDW280-10832 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM		QUAL.TEST(70)	2
↑	LDW280-52920	LM-15㊺	1
	↑	LM-14㊹	1
		LM-13㊸	1
		LM-12㊷	1
		LM-11㊶	1
		LM-10㊵	1
		LM-9㊴	1
		LM-8㊳	1
		LM-7㊲	1
		LM-6㊱	1
		LM-5㉟	1
		LM-4㉞	1
↓	↓	LM-3㉝	1
LM	LDW280-52920	LM-2㉜	1
PART NO. LDW280-10832-25		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28253	LM-1㉛	1 EA
LM	LDW280-23253	LTA-3⑬	1 EA
LM	LDW280-28253	LTA-8⑱	1 EA
PART NO. LDW280-10832-11&-12			
LM	LDW280-23253	LEM-15(45)	1 EA
↑	↑	LEM-14(44)	1 EA
		LEM-13(43)	1 EA
		LEM-12(42)	1 EA
		LEM-11(41)	1 EA
		LEM-10(40)	1 EA
		LEM-9(39)	1 EA
		LEM-8(38)	1 EA
		LEM-7(37)	1 EA
		LEM-6(36)	1 EA
	↓	LEM-5(35)	1 EA
	LDW280-23253	LEM-4(34)	1 EA
	LDW280-28253	LEM-3(33)	1 EA
	LDW280-23253	LTA-3(13)	1 EA
	LDW280-28253	LEM-2(32)	1 EA
↓	LDW280-28253	LEM-1(31)	1 EA
LM	LDW280-28253	LTA-8(18)	1 EA
PART NO LDW280-10832 -13,-14,-15,-19		GAEC SCH NO. 32-Z	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10		2.00	3.00			
REV	B	B		B	B			
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED		GRUMMAN REL INFO B	
LAST DASH NO. USED	-27	PRIM NO. 215	JK(601) MP-18 7/8/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.010 ±1/2
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM I
DOCUMENTATION TYPE II

DRAWN BY	LOWENSTEIN 2-15-66	RELIABILITY	
LAYOUT BY	VALENTINE		
CHECKED BY			
GRP LDR	R.V. PHILLIPS 2-16-66		
VEH DES INT	BISCHOFF 2-18-66		
STRUCT	BUNCE 3-11-66	PROJ ENGR	C.W. RATHKE
STRUCT	HILDERMAN 3-11-66	REL GROUP	Botti 3-22-66
WEIGHTS	ROBESCH 3-15-66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

STIFFENER
ASCENT STAGE - MID SECTION
ECS PUMP & HEAT EXCHANGER SUPPORT

SIZE	CODE IDENT NO.		
B	26512	LDW280-10832	B
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

SUPERSEDES LDW 280-10832 2-15-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
								RETRACED NO CHG LAST REV NC. SH 1 OF 3 WAS 1 OF 1			J.PAPILE		7-1-66		
A	1							EO A1	SUPERSEDED BY EO A2				PAPILE 7-1-66		
	2							EO A2	IN FLD & BM REMOVED -16, -17 ADDED -19 EG	NOTED		-16 & -17			
	3							Ⓡ	IN MODEL BLOCK FOR -11 THRU -15 & -19 ADDED LEM-7 THRU LEM-15 EFFECTIVITY. GR	LEM-7 THRU-15	NOT	REQD	M. Pachick 8-17-66		9-15-66
B	1	3.00 1.00 1.10					✓	EO B1	ON-15 ADDED (.165-.171) $\boxed{E\text{-}19}$ 1 HOLE ADDED EO TO RECORD BLOCK FOR LTA-3	LTA-8(18) LTA-3(13) LM-1(31) THRU LM-6(36)	✓		GEORGE F. CHAIN 1-8-67		
	2	1.00						EO B2	FOR -11, -12, -13, -14, -15 & -16 N/A WAS LDW280-23253 FOR LM-3(33)	LM-3(33)	NOT	REQ'D.			
	3	1.00, 2.00 & 3.00					✓	EO B3 LCD 1516	CREATED -21, -23, & -25 RESTRICTED EFFECTIVITY OF -11 & -12 TO LTA-8(18) LTA-3(13) & LM-1(31) (WAS) LTA-8(18), LTA-3(13) & LM-1(31) THRU LM-15(45)	LM-2(32) THRU LM-15(45)	✓	-11 -12			
	4	3.00					✓	EO B4 LCD 1516	REF EO B3 ON-23 ADDED 7/8 DIM.		NOT	REQ'D			
	5						✓	EO B5	TRIMMED -23		✓				
	6	1.00, 2.00 & 3.00					✓	EO B6 LCD 1516	IN FLD, B/M & MOD/BLK ADDED -27 IN MOD/BLK FOR -23 DELETED LM-4(34) THRU LM-15(45) EFFECTIVITY	LM-4(34) THRU LM-15(45)		-23			
	7	1.00					✓	EO B7	ON-25 IN MOD BLK NEXT ASSY LDW 280-52920 WAS LDW280-28253 & LDW280-23253. EFF LM-2 THRU LM-15 (1)/MOD.	LM-2(32) THRU LM-15(45)	NOT	REQ'D			
	8						✓	LEO280-775 LCD 1516	ADDED N/A TEST. EFF QUAL TEST (70) & QUANTITY 2 OF EACH REQ'D.	QUAL TEST (70)	NOT	REQ'D			7-8-68
	9	3.00					✓	EO B9	ON-25 IN FLD ADDED DRILL #50 (.069-.074) 3/32 & 7/16 DIMENSIONS	LM-2 THRU LM-15	✓		ES		

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS
A			[illegible] 8/31		
B					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10832	B
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10832-27	E	CHANNEL	AL ALLOY SH	QQ-A-250/12	7075	.040X2X 8	T6	88	
		-25	↑	TEE	AL ALLOY EXTR	QQ-A-200/11	7075-T6511	DIE#33481X1¾	NONE	↑	
		-23		CHANNEL	AL ALLOY SH	QQ-A-250/12	7075	.040X2X 8	T6		
		-21		STIFFENER	AL ALLOY SH	QQ-A-250/12	↑	.040X2X 7	↑		
		-19		STIFFENER	AL ALLOY SH	QQ-A-250/12		.040×2×5⅞			
		-15		↑	↑	↑		.040×2×5⅞			
		-14						.040×2×6⅜			
		-13						.040×2×6⅜			
		-12	↓	↓	↓	↓	↓	.040×2×6⅝	↓	↓	
		LDW280-10832-11	E	STIFFENER	AL ALLOY SH	QQ-A-250/12	7075	.040×2×6⅝	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10832	B

SCALE NONE

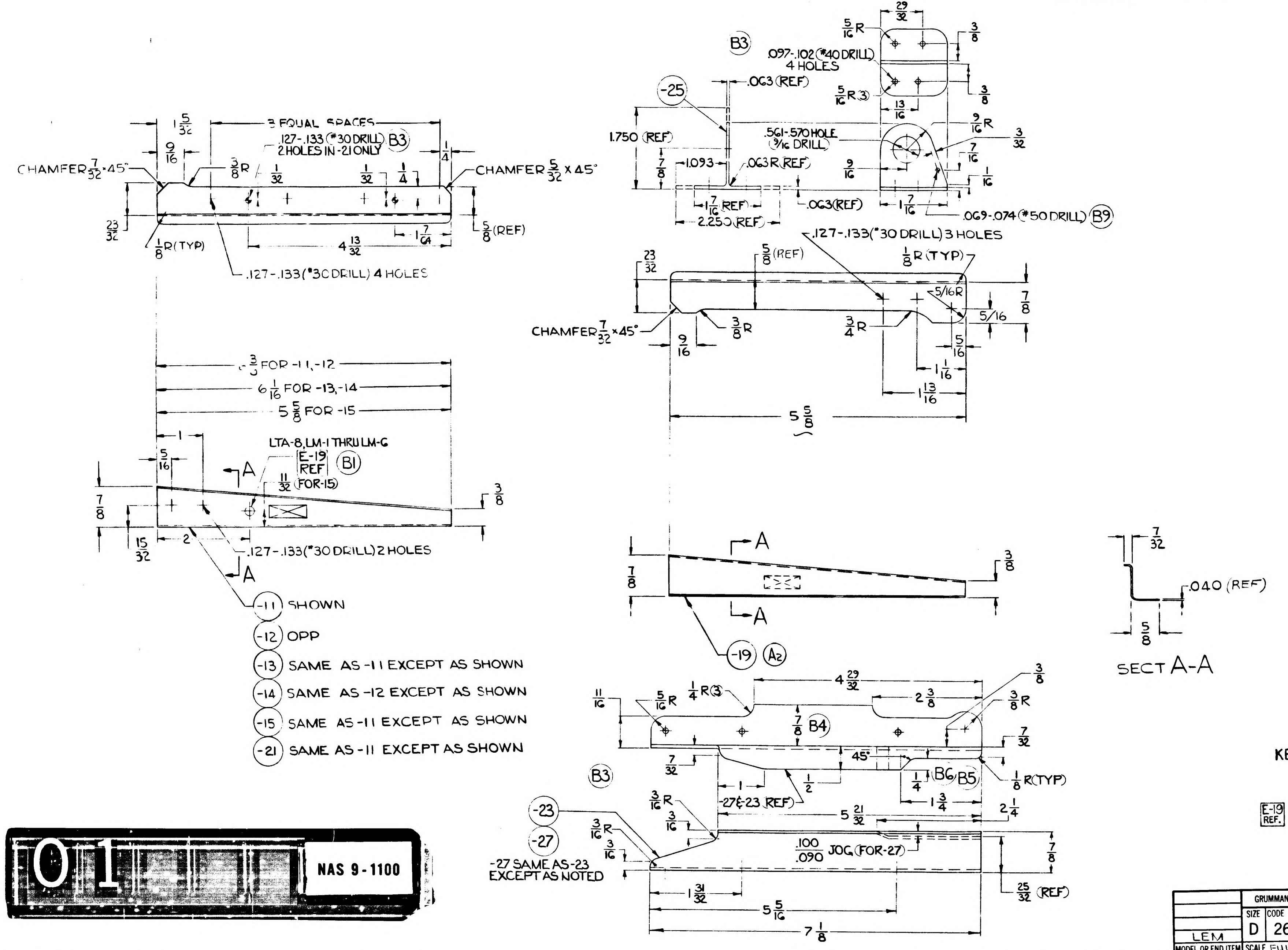
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES: 1. NO TOOLING HOLES PERMITTED IN PARTS


LDW280-10832B
3 EQUAL SPACES
.127-.133 (#30 DRILL) 2 HOLES IN -21 ONLY
B3
CHAMFER 7/32 × 45°
CHAMFER 5/32 × 45°
1/8 R (TYP)
.127-.133 (#30 DRILL) 4 HOLES
6 3/8 FOR -11, -12
6 1/16 FOR -13, -14
5 5/8 FOR -15
LTA-8, LM-1 THRU LM-6
E-19 REF
B1
11/32 (FOR-15)
A
.127-.133 (#30 DRILL) 2 HOLES
-11 SHOWN
-12 OPP
-13 SAME AS -11 EXCEPT AS SHOWN
-14 SAME AS -12 EXCEPT AS SHOWN
-15 SAME AS -11 EXCEPT AS SHOWN
-21 SAME AS -11 EXCEPT AS SHOWN
-25
.097-.102 (#40 DRILL) 4 HOLES
.063 (REF)
1.750 (REF)
.561-.570 HOLE 9/16 DRILL
.063 R (REF)
2.250 (REF)
.069-.074 (#50 DRILL)
B9
.127-.133 (#30 DRILL) 3 HOLES
1/8 R (TYP)
5/8 (REF)
5 5/8
-19
A2
SECT A-A
.040 (REF)
B4
B6
B5
-27 & -23 (REF)
.100/.090 JOG (FOR -27)
25/32 (REF)
-23
-27
-27 SAME AS -23 EXCEPT AS NOTED
7 1/8

01

NAS 9-1100

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

KEY TO PURPOSE OF HOLES, ETC., MARKED E-19 REF.

E-19 REF. ELECTRICAL DRILL #19 (.165-.171)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK				
LEM	SIZE D	CODE IDENT NO. 26512	LDW280-10832	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 1309
CONTROL INFO NO. LDW280B6825

TO DASH #S LISTED OF THE FOLLOWING DWG'S RESTRICT TO LM2(32) THRU LM14(44) WAS LM2(32) THRU LM15(45)

DWG #	TITLE	* DASH #	QUANTITY	N/A	E.O. #
LDW280M11319	FITTING A/S M/S X233.5 SURGE TANK SPT.	-11	1	LDW280-52920	A2
LDW280M11320	FITTING A/S-MS X233.5 SURGE TANK SPT	-11	1	LDW280-52920	A2
LDW280-10832	STIFFENER A/S-M/S X233.5 SURGE TANK SPT	-25	1	LDW280-52920	C1

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 3587 PKG#11 (5)

REASON FOR EO: ELIMINATION OF CERTAIN EQUIP. IN THE LM15 A/S

DESCRIPTION OF EO: IN * MOD BLK RESTRICT TO LM2(32)-LM14(44) WAS LM2(32)-LM15(45)

GAEC RELEASE 3/21
JC 3/21/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM15 (45)	

EFFECTIVITY: M

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			✓

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY				FDR				
DATE	3/6/69			3/6/69	3/19/69		3/20/69	3/22/69

PRIORITY: C
DRAWING TITLE: SEE ABOVE
DRAWING NO.: LEO 280
EO NO.: 1309

4-15-69
ISSUED BY P. WEISSLITZ x86048 SECTION VDI GROUP NO. 335 PL 25

01 NAS 9-1100

LDW280-10833

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23253	LM-6(36)	1 EA
↕	↕	LM-5(35)	1 EA
		LM-4(34)	1 EA
		LM-3(33)	1 EA
	LDW280-23253	LTA-3(13)	1 EA
	LDW280-28253	LM-2(32)	1 EA
	LDW280-28253	LM-1(31)	1 EA
LM	LDW280-28253	LTA-8(18)	1 EA

PART NO. LDW280-10833-11, -13 & -15

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -15

GRUMMAN REL INFO

PRIM NO. 215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.010 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM * 1

DOCUMENTATION TYPE II

DRAWN BY	LOWENSTEIN 2/15/66	RELIABILITY	
LAYOUT BY	VALENTINE		
CHECKED BY			
GROUP LEADER	R. PHILLIPS 3/16/66		
VEH DES INT	W. BISCHOFF 2/18		
STRUCTURES	F. BUNCE 3/8/66	PROJ ENGR	J. ALBER 3/15/66
STRUCTURES	R. HILDERMAN 3/8	REL GROUP	C. BOTTI 3/18/66
WEIGHTS	D. ROBESCH 3/10		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

WEB
ASCENT STAGE-MID-SECTION
E.C.S. PUMP & HEAT EXCHANGER SUPPORT

SIZE B | CODE IDENT NO. 26512 | LDW280-10833

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

01

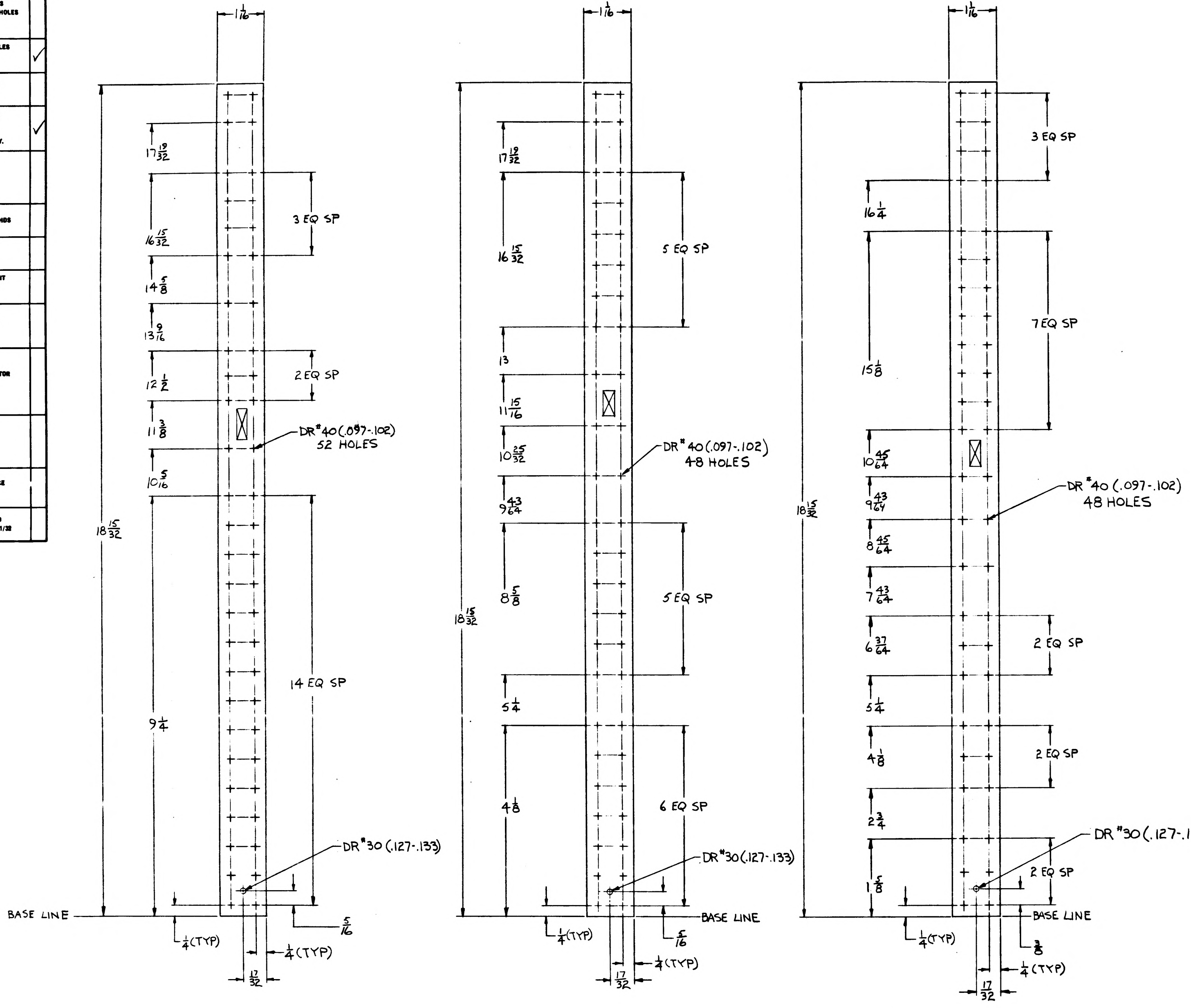
NAS 9-1100

REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY / DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MODULE NUMBER	DISPOSITION OF EXIST PARTS: RE-WORK	SCRAP	ENGRG APPD	GOVT APPD

MANUFACTURING OPERATIONS

NOTES CHECKED ✓ APPLY TO THIS DWG.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.	✓
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.	
250 FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.	✓
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ∫ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	



LDW280-10833-15 WEB

LDW280-10833-13 WEB

LDW280-10833-11 WEB

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS

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NAS 9-1100

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	~~G. S. S.~~ LSP-14-9030	

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

ENG. 884 3-63

QTY REQ'D PER ASSY			PART OR IDENTIFYING NO.	I & T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE
			LDW280-10833-15	E		WEB	AL ALY SH	QQ-A-283	7075-T6	.040 × 1 1/4 × 19	NONE	88		
			LDW280-10833-13	E		WEB	AL ALY SH	QQ-A-283	7075-T6	.040 × 1 1/4 × 19	NONE	88		
			LDW280-10833-11	E		WEB	AL ALY SH	QQ-A-283	7075-T6	.040 × 1 1/4 × 19	NONE	88		

DWG TO BE REDRAWN ON PRODUCTION FORMAT 3

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
LEM	LDW280-23253	LEM-6 (36)	1EA
↕	↕	LEM-5 (35)	1EA
		LEM-4 (34)	1EA
		LEM-3 (33)	1EA
	LDW280-23253	LTA-3 (13)	1EA
LEM	LDW280-28253	LTA-8 (18) LEM-1 (31) LEM-2 (32)	1EA

PART NO. LDW280-10833-11, -13, -15 GRUMMAN SCH INFO 32-2

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ± 1/32 ±.010 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

GRUMMAN REL INFO

PRIM. NO. 2/5 MP17

DRAWN BY	LOWENSTEIN	
CHECKED BY		
LAYOUT BY	VALENTINE	
GROUP LEADER	R. PHILLIPS	
VEH DES INT		
STRUCTURES		
STRUCTURES		
WTS		2-10
RELIABILITY		
PROJECT		
RELEASE		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

WEB
ASCENT STAGE ~ MID-SECTION
E.C.S PUMP & HEAT EXCHANGER SUPPORT

CONTRACT NO. NAS 9-1100 DOCUMENTATION TYPE II

CODE IDENT NO. 26512 SIZE E LDW280-10833

SCALE FULL LINE ITEM 1 SHEET

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHG LAST REV. NC. ADDED SHEETS 1.10, 2.00 & 3.00	R. COPPOLA 10/6/66					

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURE	STRUCTURE	WEIGHTS	RELIABILITY	PROJECT	RELEASE			

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-10833
SCALE NONE
SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10833-15	E	WEB	AL ALLOY SH	QQ-A-250/12	7075-T6	.040 × 2 × 19	NONE	88	
		LDW280-10833-13	E	WEB	AL ALLOY SH	QQ-A-250/12	7075-T6	.040 × 2 × 19	NONE	88	
		LDW280-10833-11	E	WEB	AL ALLOY SH	QQ-A-250/12	7075-T6	.040 × 2 × 19	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10833

SCALE NONE

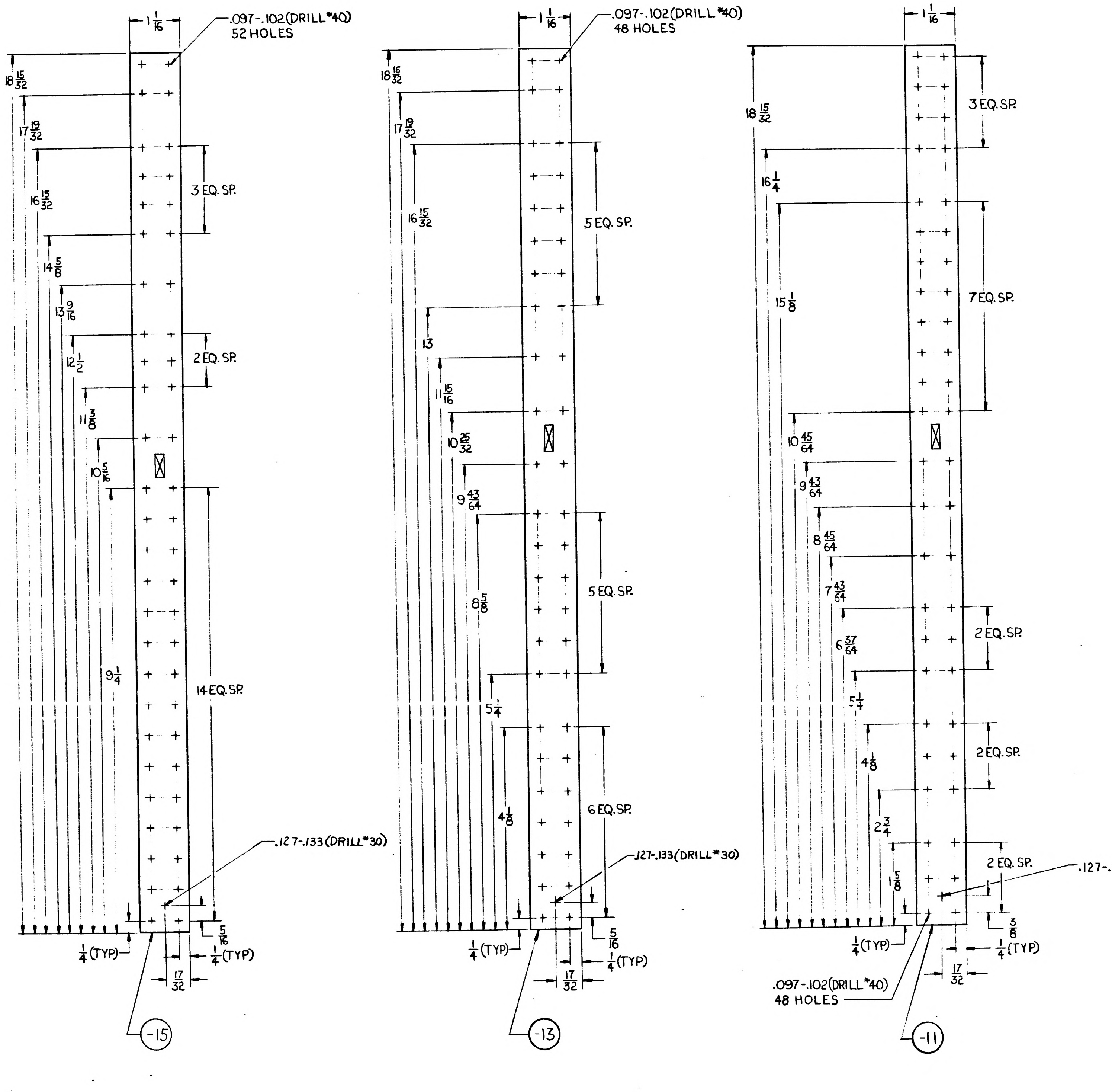
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1) NO TOOLING HOLES PERMITTED IN PARTS.



1 1/16
.097-.102 (DRILL #40) 52 HOLES
18 15/32
17 19/32
16 15/32
14 5/8
13 9/16
12 1/2
11 3/8
10 5/16
9 1/4
3 EQ. SP.
2 EQ. SP.
14 EQ. SP.
.127-.133 (DRILL #30)
1/4 (TYP)
5/16
1/4 (TYP)
17/32
-15
1 1/16
.097-.102 (DRILL #40) 48 HOLES
18 15/32
17 19/32
16 15/32
13
11 15/16
10 25/32
9 43/64
8 5/8
5 1/4
4 1/8
5 EQ. SP.
5 EQ. SP.
6 EQ. SP.
.127-.133 (DRILL #30)
1/4 (TYP)
5/16
1/4 (TYP)
17/32
-13
1 1/16
18 15/32
16 1/4
15 1/8
10 45/64
9 43/64
8 45/64
7 43/64
6 37/64
5 1/4
4 1/8
2 3/4
1 5/8
3 EQ. SP.
7 EQ. SP.
2 EQ. SP.
2 EQ. SP.
2 EQ. SP.
.127-.133 (DRILL #30)
1/4 (TYP)
3/8
1/4 (TYP)
17/32
.097-.102 (DRILL #40) 48 HOLES
-11

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN TO .0005 MAX MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD 10	
200 √ FOR ALL DRILLED HOLES	✓
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	✓
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK
SIZE E
CODE IDENT NO. 26512
LDW280-10833
LM
MODEL OR END ITEM
SCALE FULL
SHEET 3

LDW280-10833

LDW280-10833

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10833
EO NO. B1
CONTROL INFO NO. LDW 280 A 3967

FOR -11, -13 & -15 ON SHT #1

N/A LDW280-28253 FOR LM-3(33) WAS LDW280-23253

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: DWG. CORRECTION

DESCRIPTION OF EO: FOR -11, -13 & -15 N/A WAS LDW280-23253 FOR LM-3(33)

GAEC EO RELEASE: 12/12

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3(33)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: NOT REQD.

APPROVED BY: RV | — | — | PROJ ENGRG

DATE: 12-5-66 | — | 12 6 | 12-7-66 | 12/7/66

6	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	A/S. M/S. ECS PUMP & HEAT EXCHANGER SUPPORT WEB	LDW280-10833	B1

ISSUED BY J.J. LEONARD x1441 12/2/66 SECTION V01 GROUP NO. 335 PL 55

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 526
CONTROL INFO NO. LDW280 A5914

TO THE FOLLOWING DRAWINGS LISTED BELOW & THEIR DASH NUMBERS * THAT ARE EFFECTIVE ON LM-6(36) ADD EFFECTIVITIES FOR LM-7(37) LM-8(38), LM-9(39), LM-10(40), LM-11(41), LM-12(42), LM-13(43), LM-14(44), LM-15(45). QUANTITIES & N/A REMAIN THE SAME AS LM-6(36.)

DRAWING No.	DASH No *	CHG. NO.	TITLE	NEXT ASSY
LDW280-10245	-17, -19	C4	ANGLE CAB. L.H WIND	LDW280-23074
-10261	-13, -15, -17, -19, -20	C1	CHAN M/S BEAM	-54030
-10300	-13, -15	D2	CLIP RH ZO FRM LWR	-54020
-10310	-15	D1	CHAN CAB. WIND AREA	-23074
-10380	-15	C1	SHIM FWD HATCH HINGE	-54083
-10561	-11	A1	WEB M/S ENG SPT. FWD	-23077
-10702	-17	A1	DBLR DOCK TUN.	-23069
-10830	ULTRA SONIC STD. PANELS	B1	FAB. PROC-RCS-HE MDD	H23143
-10833	-11, -13, -15	B2	WEB ECS HEAT EXC SPT	-23253
-10904	-11, -13, -17	C3	SUPT IMU BEAM WIRING	-23031
-23168	-1, -3, -5 & -7	A2	HATCH ASSY DOCK TUNNEL	-23069
M23139	-1	B1	VEE ASSY CAB NVP - LAP	-23066
-11066	-11, -12	A1	CLIP S BAND ANTENNA	-23246
-11110	-11	C1	FTG AEB CAGE STRUT	-23039
-11117	-17, -19	B1	CHANNEL X253 DECK	-23029
-11117	-11, -13 & -15		CHANNEL X253 DECK	-53476
-11159	-15, -17, -18	B2	ZEE SHIELD X253.5	-53476
-11191	-11	C1	SUPT F.F. EQUIP LINES	-54075
-11351	-1 & -3	B2	BRACKET ASSY	-23488
-53078	-1	A7	BEAM INSTL M/S Z10.25	-54012
H23903	-5	C4	SKIRT ASSY OXID	LDW280-23901
M10555	-1, -2	A1	CLIP LONGERON CABIN	-23048
-28753	-1	A4	SKIN ASSY DS SC	-28750
-23066	-1	B4	FR IN CAB NA BAS SUP	-54002
-23511	NONE	B3	JIG DATA - REF DWG.	NONE
M11108	-1	B1	BOLT ZO R.H SHIELD SUP	-51199
-25709	-1	A2	SHIELD INSTL DS EC	-25661
-28362	-3	A2	STRAP ASSY CABIN	-54357
-28645	-3	A2	ACCESS COV INST PLSS	-54553

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LM-7(37) THRU LM-15 (45) EFF.

Ⓡ GAEC EO RELEASE: 3 JK 3/27/7

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO
LM		LM-7(37) THRU	LM-15(45)

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
✓		NOT REQD		DATE	3/16/67			—	3/6		3-23-67	3/24/67
REVISE DWG	RECORD EO	REWORK	SCRAP	6	VOI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	NOTED	LEO 280	526

ISSUED BY A. MAICA X1392 SECTION VEH DES. INTRE GROUP NO. 535 PL 35

01
NAS 9-1100

LDW280-10834

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23253	LM-6 (36)	1 EA
		LM-5 (35)	1 EA
		LM-4 (34)	1 EA
	LDW280-23253	LM-3 (33)	1 EA
	LDW280-28253	LM-2 (32)	1 EA
	LDW280-28253	LM-1 (31)	1 EA
	LDW280-28253	LTA-8 (18)	1 EA
LM	LDW280-23253	LTA-3 (13)	1 EA

PART NO. LDW280-10834-11, 13 & -15

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED B

LAST DASH NO. USED -15

GRUMMAN REL INFO

PRIM NO. 215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED

FRACTIONS	DECIMALS	ANGLES
± 1/32	± .010	± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY LOWENSTEIN 2-15-66

RELIABILITY

LAYOUT BY VALENTINE

CHECKED BY

GROUPLEADER JJP/R PHILLIPS 2-16-66

VEH DES INT W BISCHOFF 2-17-66

STRUCTURES FEB RW 3-8-66

STRUCTURES HILDERMAN 3-8-66

WEIGHTS D ROBESCH 3-9-66

PROJ ENGR RMC/J. ALBER 3-14-66

REL GROUP A CARAHANICA 3-15-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

FRAME
ASCENT STAGE ~ MID - SECTION
E. C. S. PUMP & HEAT EXCHANGER SUPPORT

SIZE B

CODE IDENT NO. 26512

LDW280-10834

SCALE NONE

SHEET 1.00 OF 4

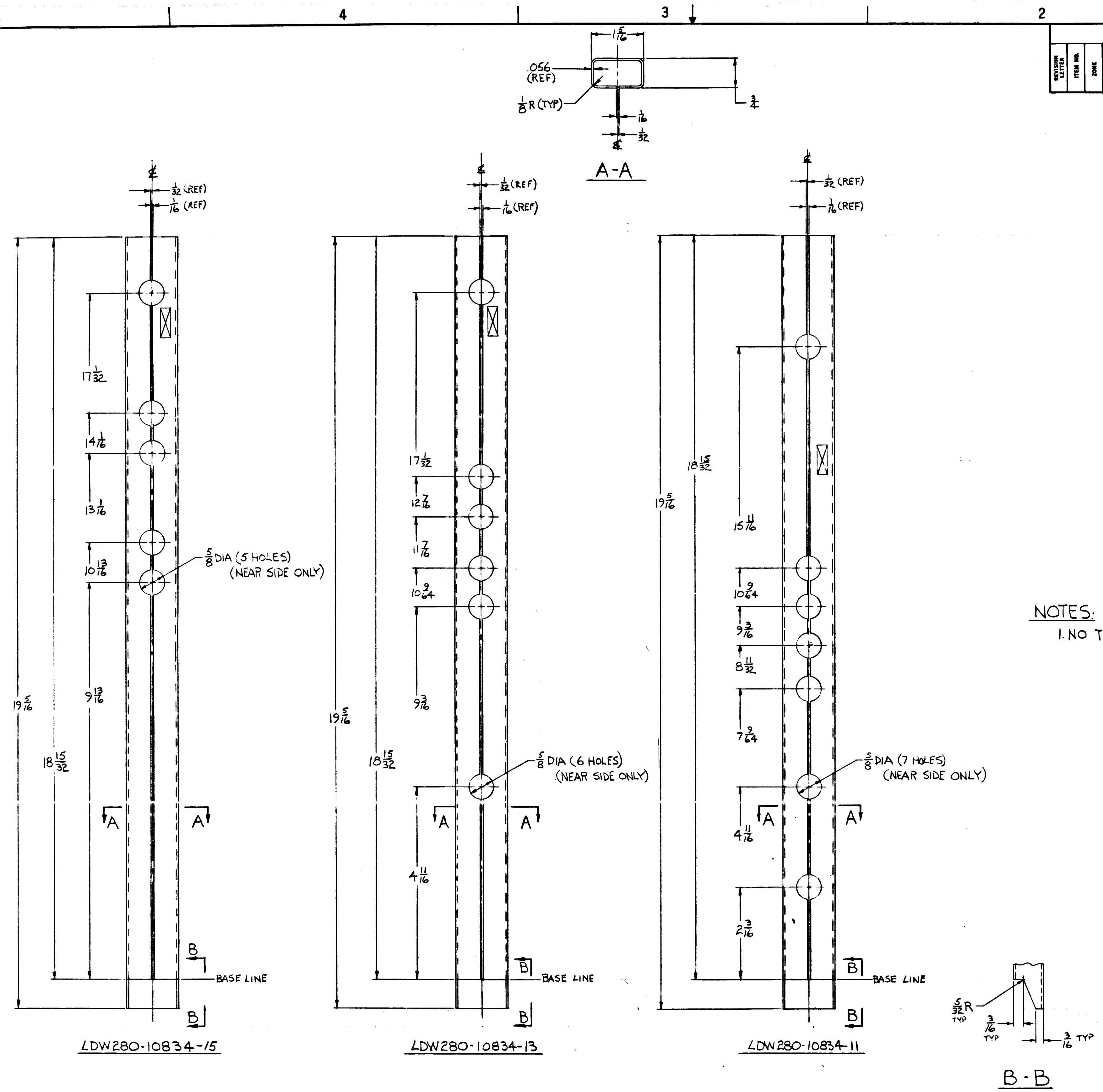
ENG 77.1 12-65

01

NAS 9-1100

MANUFACTURING OPERATIONS	
NOTES CHECKED ✓ APPLY TO THIS DWG.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.	✓
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.	
200√ FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ƒ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	

REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY / DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MODULE NUMBER	DISPOSITION OF EXIST PARTS: RE-WORK	SCRAP	ENGRG APPD	GOVT APPD



1 5/16
.056 (REF)
1/8 R (TYP)
3/4
1/16
1/32
A-A
℄
1/32 (REF)
1/16 (REF)
17 1/32
14 1/16
13 1/16
10 13/16
9 13/16
19 5/16
18 15/32
5/8 DIA (5 HOLES) (NEAR SIDE ONLY)
A
B
BASE LINE
LDW280-10834-15
17 1/32
12 7/16
11 7/16
10 9/64
9 3/16
4 11/16
5/8 DIA (6 HOLES) (NEAR SIDE ONLY)
LDW280-10834-13
18 15/32
19 5/16
15 11/16
10 9/64
9 3/16
8 11/32
7 9/64
4 11/16
2 3/16
5/8 DIA (7 HOLES) (NEAR SIDE ONLY)
LDW280-10834-11
5/32 R TYP
3/16 TYP
3/16 TYP
B-B

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	~~G. S. S.~~ LSP-14-9030	

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
-T6	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

ENG. 004 5-63

01

NAS 9-1100

QTY REQ'D PER ASSY			PART OR IDENTIFYING NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE
			LDW280-10834-15	E		FRAME	AL ALY SH	QQ-A-283	7075	.056×4 1/2×19 3/4	-T6	89		
			LDW280-10834-13	E		FRAME	AL ALY SH	QQ-A-283	7075	.056×4 1/2×19 3/4	-T6	88		
			LDW280-10834-11	E		FRAME	AL ALY SH	QQ-A-283	7075	.056×4 1/2×19 3/4	-T6	98		

DWG TO BE REDRAWN ON PRODUCTION FORMAT 3

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
LEM	LDW280-23253	LEM-6 (36)	1EA
		LEM-5 (35)	1EA
		LEM-4 (34)	1EA
		LEM-3 (33)	1EA
	LDW280-23253	LTA-3 (13)	1EA
LEM	LDW280-28253	LTA-8(18) LEM-1(31) LEM-2(32)	1EA
PART NO. LDW280-10834-11,-13,-15		GRUMMAN SCH INFO 32.2	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.010 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

GRUMMAN REL INFO
PRIM. NO. 215 LE001 MP12 RS

DRAWN BY	L. WENSTEIN	2
CHECKED BY I		
LAYOUT BY	VALENTINE	
GROUP LEADER	E. PHILLIPS	
VEH DES INT		12/1
STRUCTURES		
STRUCTURES	H. KOERMAN	
WTS		3-9
RELIABILITY		
PROJECT		
RELEASE		3-15-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L.I., N.Y.

FRAME
ASCENT STAGE ~ MID-SECTION
E.C.S. PUMP & HEAT EXCHANGER SUPPORT

CONTRACT NO. NAS9-1100 DOCUMENTATION TYPE II

CODE IDENT NO. 26512 SIZE E LDW280-10834

SCALE FULL LINE ITEM 1 SHEET 1

LDW280-10834

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
		1.10, 200 & 3.00							RETRACED NO CHG LAST REV NO CHG C CASTELLANO 10-6-66 ADDED SHEETS 1.10, 2.00 & 3.00	NOTED	NOT	REQ'D			

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10834

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10834-15	E	FRAME	AL ALY SH	QQ-A-250/12	7075	.056 X 4½ X 19¾	T6	88	
								LDW280-10834-13	E	FRAME	AL ALY SH	QQ-A-250/12	7075	.056 X 4½ X 19¾	T6	88	
								LDW280-10834-11	E	FRAME	AL ALY SH	QQ-A-250/12	7075	.056 X 4½ X 19¾	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030
						T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B | CODE IDENT NO. 26512 | LDW280-10834

SCALE NONE | SHEET 2.00

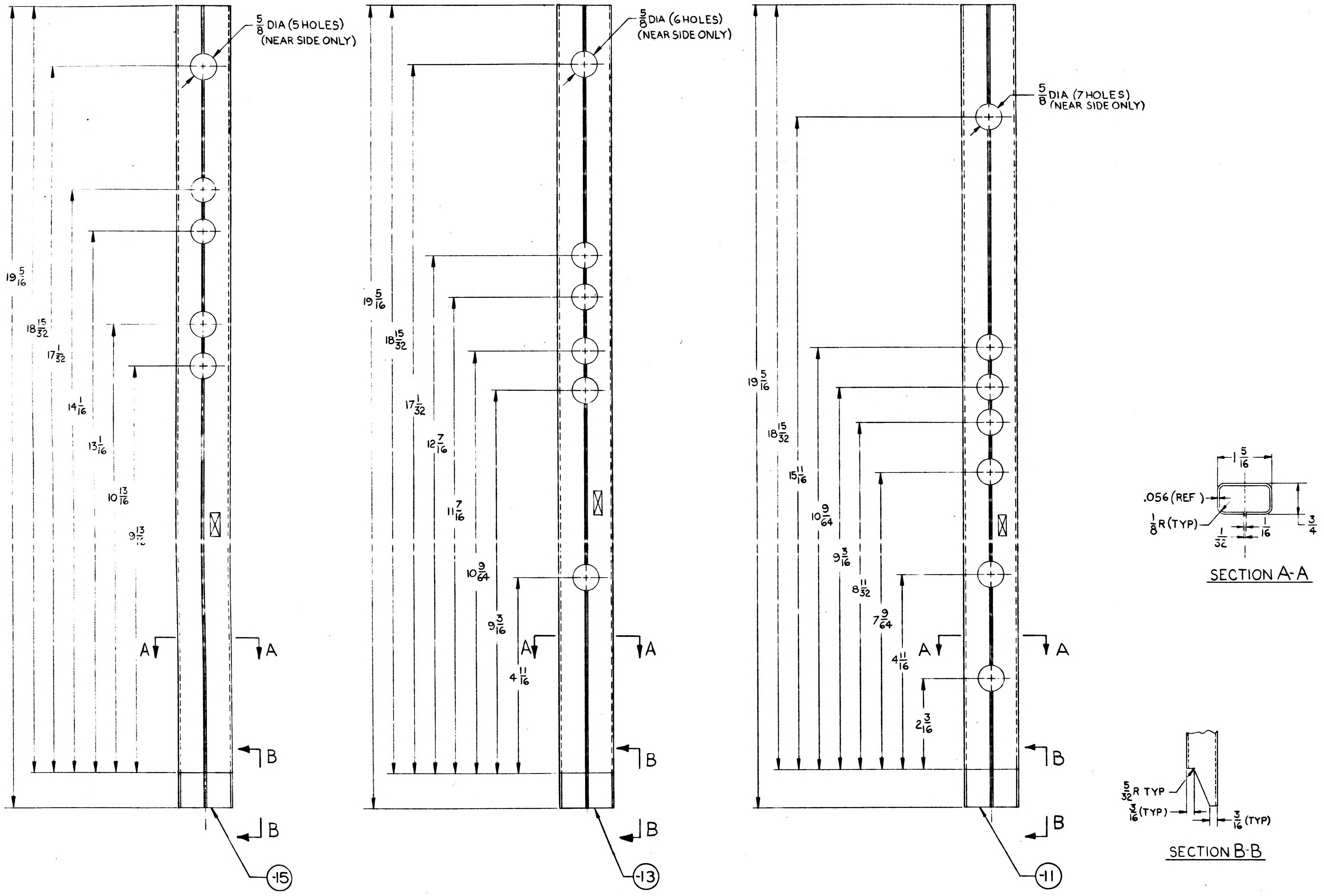
ENG 77.2 7-65

01 NAS 9-1100

NOTE
1 NO TOOLING HOLES PERMITTED IN PARTS

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	


5/8 DIA (5 HOLES) (NEAR SIDE ONLY)
19 5/16
18 15/32
17 1/32
14 1/16
13 1/16
10 13/16
9 13/16
A
A
B
B
-15
5/8 DIA (6 HOLES) (NEAR SIDE ONLY)
19 5/16
18 15/32
17 1/32
12 7/16
11 7/16
10 9/64
9 3/16
4 11/16
A
A
B
B
-13
5/8 DIA (7 HOLES) (NEAR SIDE ONLY)
19 5/16
18 15/32
15 11/16
10 9/64
9 3/16
8 11/32
7 9/64
4 11/16
2 3/16
A
A
B
B
-11
1 5/16
.056 (REF)
1/8 R (TYP)
1/32
1/16
3/4
SECTION A-A
5/32 R TYP
3/16 (TYP)
3/16 (TYP)
SECTION B-B

01 NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
LM	SIZE E	CODE IDENT NO. 26512	LDW280-10834	
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW 280-10834	EO NO. A1
CONTROL INFO NO. LDW 280A 3968	

ON -11, -13 & -15 ON SHT #1.

H/A LDW 280-28253 FOR LM-3(33) WAS LDW 280-23253

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
DWG. CORRECTION	FOR -11, -13 & -15 H/A WAS LDW 280-23253 FOR LM-3(33)	C 12/12

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3(33)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓		NOT REQD.	
REVISE DWG	RECORD EO	REWORK	SCRAP

APPROVED BY				—	JW		ENG'G	
DATE	12-5-66			—	12-6		12-7-66	12/7/66
6	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GAEC~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	FRAME A/S-M/S-ECS PUMP & HEAT EXCHANGER SUPPORT	LDW 280-10834	A1

ISSUED BY J.J. LEONARD X1441 12/2/66 SECTION VD1 GROUP NO. 335 PL 35

01 **NAS 9-1100**

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER EMF A

DWG. NO. LDW280-10834
EO NO. A2
CONTROL INFO NO. LDW 280 A 5045

ON SHT #1 FOR -11 -13 & -15

EXTEND EFFECTIVITY FOR LM-7(37) THROUGH LM-15(45)
QUANTITY 1EA N/A LDW 280-23253

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG			3

REASON FOR EO: ADD REQUIREMENTS

DESCRIPTION OF EO: EXTENDED EFF. OF -11, -13 & -15 TO LM-7(37) THROUGH LM-15(45)

GAEC EO RELEASE: FR 1/24/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LM-7(37)	THROUGH LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		NOT REQD	

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY				RVE ES				
DATE	1/20/67			1-19-67			1-23-67	1-24-67
6	V.D.I							

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	A/S M/S ECS PUMP & HEAT EXCHANGER SUPT FRAME	LDW 280-10834	A2

ISSUED BY J J LEONARD X1153 1/17/67 SECTION VDI GROUP NO. 335 PL 35

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LTT430-20630	LDW280-28026	1 & SUBQ	4 EA
LTT430-20620	LDW280-28026	1 & SUBQ	4 EA
LEM	LDW280-28026	LIA-8(18)	4 EA

PART NO.	GAEC SCH NO.
LDW280-10835-13,-14,-15 & -16	35-

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	200	3.00					
REV	A	A							
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO		
LAST DASH NO. USED	-16	PRIM NO. 215	LE(001) MP12	IR 4-27

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	SUPPA 2-24-66	RELIABILITY	
LAYOUT BY	COLEMAN		
CHECKED BY	D.FASS 3-7-66		
GR LEADER	4/20/66		
VEH DES INT	4/20		
STRUCTURES		PROJ ENGR	4-27
STRUCTURES	H Coleman 4/20	REL GROUP	Botti 4-29-66
WEIGHTS	4-27		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE-MID SECT-TANK
PIPING SUPPORT STRUCTURE

SIZE	CODE IDENT NO.		
B	26512	LDW280-10835	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 9-64

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1, 1.10						LEO280-104	FOR -13,-14,-15 & -16 ADDED EFF. OF : LTT430-20620 AND LTT430-20630 . ADDED SHEET 1.10, SHEET 1.00 OF 4 WAS SH 1.00 OF 3	1 & SUBQ	NOT	REQD	R. PRINZIVALLI 6-24-66	☒	☒
	2								REF ITEM A1 QUANTITY TO BE THE SAME AS EXISTING DASH NUMBERS.			S.J.			②

CHG APPROVED

LTR	GROUP LDR	V. D. I.	STRUCT.	STRUCT	WEIGHTS	RELIABILITY					
A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10835	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10835-16	E	CHANNEL	AL ALLOY SH	QQ-A-250/5	2024-T3	.040x3 5/8 x 4 5/8	NONE	76	
		-15		CHANNEL	AL ALLOY SH	QQ-A-250/5	2024-T3	.040x3 5/8x4 5/8	NONE	76	
		-14		ANGLE	AL ALLOY EXTR	QQ-A-200/11	7075-T6511	AND10134-0702x2 3/16	NONE	76	
		LDW280-10835-13	E	ANGLE	AL ALLOY EXTR	QQ-A-200/11	7075-T6511	AND10134-0702x 2 3/16	NONE	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10835

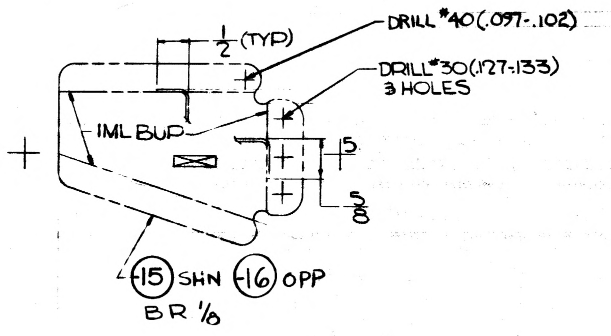
SCALE NONE SHEET 2.00

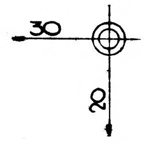
ENG 77.2 7-65

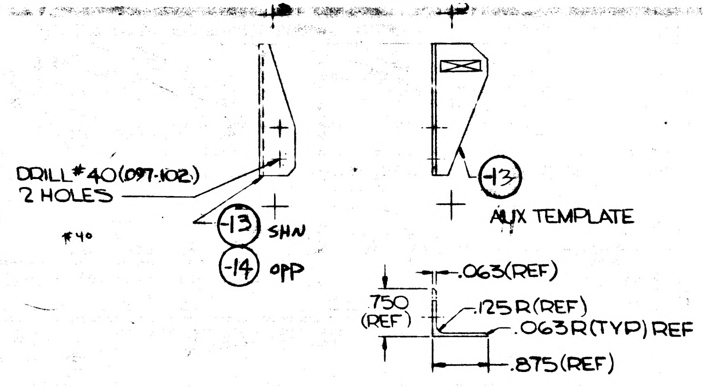
01

NAS 9-1100

NOTES:
1-NO TOOLING HOLES PERMITTED IN PARTS.


DRILL #40(.097-.102)
1/2 (TYP)
DRILL #30(.127-.133)
3 HOLES
IML BUP
.5
5/8
-15 SHN
-16 OPP
BR 1/8




DRILL #40(.097-.102)
2 HOLES
#40
-13 SHN
-14 OPP
-13
AUX TEMPLATE
.063(REF)
.750
(REF)
.125 R (REF)
.063 R (TYP) REF
.875(REF)

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
$\sqrt{125}$ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
$\sqrt{200}$ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL $\sqrt{}$ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-10835

® GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LEM	F	26512	LDW280-10835
	SCALE		SHEET 3.00

FOR PHOTO REPRODUCTION

NAS 9-1100

01

LEM	LDW280-28274	LEM-3(33)	1
LEM	LDW280-28274	LEM-2(32)	1
LEM	LDW280-28274	LEM-1(31)	1
LEM	LDW280-28274	LTA-8(18)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10837-19		GAEC SCH NO.	

LEM	LDW280-28274	LEM-3(33)	1 EA
LEM	LDW280-28274	LEM-2(32)	1 EA
LEM	LDW280-28274	LEM-1(31)	1 EA
LEM	LDW280-28274	LTA-8(18)	1 EA
LEM	LTM280-26856	LTA-1(11)	1 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10837-13,-15 & -17		GAEC SCH NO.	

LEM	LTM280-26856	LTA-1 (11)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10837-11		GAEC SCH NO. 31-1 32-2	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00					
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL & INFO			
LAST DASH NO. USED	-17	PRIM NO.	LE(001)		
		215	MP12		

ENG 77.1 9-64

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
± 1/32 ±.020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM # 1 | DOCUMENTATION TYPE II

DRAWN BY	G. ZARCADOOLAS 3-16-66	RELIABILITY	
LAYOUT BY	J. KORYKORA		
CHECKED BY	D. FASS 3-21-66		
GR LEADER	Phillips 3/23/66		
VEH DSGN INT	3/26		
STRUCTURES	3/31/66	PROJ ENGR	3-29-66
STRUCTURES	Hilderman 3/26	REL GROUP	Caramanna 3-30
WEIGHTS	3/29		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE-MIDSECTION-+Y22 BEAM
PROPULSION VIBRATION AMPLIFIER

SIZE	CODE IDENT NO.	
B	26512	LDW280-10837
SCALE	NONE	SHEET 1.00 OF 3

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10837-19	E	BRACKET	ALALY SH	QQ-A-283	7075	.028X5⅛X10⅞	T6	88	3C
								-17		BRACKET		QQ-A-355	2024-T3	.032X2⅝X3¾	NONE	88	5E
								-15		CLIP				.028X2X5½	NONE	88	4G
								-13		CLIP		QQ-A-355	2024-T3	.028X2X5⅝	NONE	88	7G
								LDW280-10837-11	E	BRACKET	ALALY SH	QQ-A-283	7075	.028X4¾X10⅞	T6	88	5C

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	ALHEATTREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

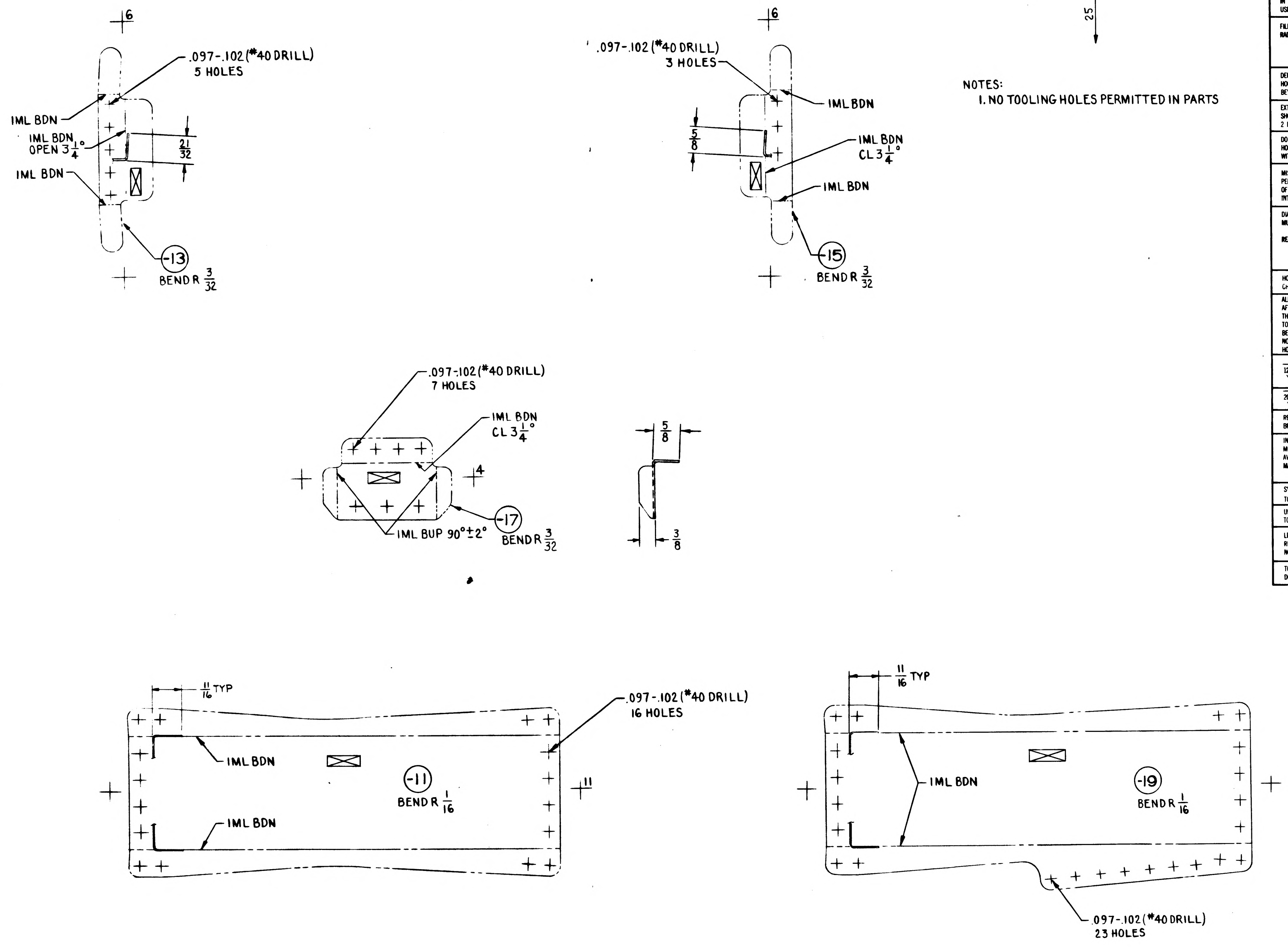
SIZE	CODE IDENT NO.	
B	26512	LDW280-10837

SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


6
.097-.102 (#40 DRILL)
5 HOLES
IML BDN
IML BDN
OPEN 3 1/4°
21/32
IML BDN
-13
BEND R 3/32
6
.097-.102 (#40 DRILL)
3 HOLES
IML BDN
5/8
IML BDN
CL 3 1/4°
IML BDN
-15
BEND R 3/32
30
25
.097-.102 (#40 DRILL)
7 HOLES
IML BDN
CL 3 1/4°
4
-17
BEND R 3/32
IML BUP 90° ± 2°
5/8
3/8
11/16 TYP
.097-.102 (#40 DRILL)
16 HOLES
IML BDN
IML BDN
-11
BEND R 1/16
11
11/16 TYP
IML BDN
-19
BEND R 1/16
.097-.102 (#40 DRILL)
23 HOLES

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-10837

LDW280-10837

01

NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK		
LEM	SIZE F	CODE IDENT NO. 26512	LDW280-10837
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

FOR PHOTO REPRODUCTION K-2

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10837		EO NO. A1
CONTROL INFO NO. LDW280A0586		

IN MODEL BLOCK FOR -11, -13, -15 & -17 RESTRICT EFFECTIVITY TO LTA-1 ONLY.

DELETE -19 FROM F/D & BM.

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐	3

REASON FOR EO	DESCRIPTION OF EO	Ⓑ GAEC EO RELEASE
PARTS REMOVED TO ELIMINATE INTERFERENCE WITH THERMAL SHIELD TRUSS	ON -11, -13, -15 & -17 REMOVED LTA-8, LM-1, -2 & -3 DELETED -19.	LE 10 5

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LTA-1 (11)	
LM		LTA-8 (18), LM-1 (31)	
LM		LM-2 (32), -3 (33)	

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
✓			✓

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY	WD			—	—			
DATE	9/22/66			—	—		10-4-66	10/3/66
	VD1							

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	BRACKET ASCENT STAGE-MID SEC-VIBRATION AMPLIFIER	LDW280-10837	A1

ISSUED BY JJFISCH SECTION VD1 GROUP NO. 335 PL 35

EMF

01 NAS 9-1100

LDW280-10838 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-56020	LEM-6(36)	1EA
↑	LDW280-55020	LEM-5(35)	↑
	LDW280-54020	LEM-4(34)	
↓	LDW280-53020	LEM-3(33)	↓
LEM	LDW280-23020	LTA-3(13)	1EA
PART NO. LDW280-10838-11 & 12		GAEC SCH NO. 32-4	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

		GRUMMAN REL INFO			
LAST SECT LTR USED		PRIM NO.	LE(001)		
LAST DASH NO. USED	-12	215	MP12A		JR. 5-20 A

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.030 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY		RELIABILITY	
LAYOUT BY	ED COLEMAN		
CHECKED BY			
GR LEADER	R.V. PHILLIPS 2/8/66		
VEH DES INT	W. BISCHOFF 2/16/66		
STRUCTURES	FEB BW 2/17/66	PROJ ENGR	J. ALBER PMC 3/23/66
STRUCTURES	HILDERMAN 2/19/66	REL GROUP	BOTTI 3/24/66
WEIGHTS	E. ROBESCH DJL 2/25/66		

2

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP
ASCENT STAGE ~ MID SECTION
DOCKING TUNNEL SPT +Z 27 +X 294

SIZE	CODE IDENT NO.		
B	26512	LDW280-10838	A
SCALE	NONE	SHEET 1.00 OF 4	

THIS DWG SUPERSEDES LDW280-10838 "NO CHANGE" 3/24/66

NAS 9-1100

01

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
A	1	1.00, 1.10, 2.00 & 3.00							RETRACED NO CHANGE LAST REVISION NO CHANGE. SH. 1 OF 4 WAS 1 OF 1. LOFTED DWG WAS DIMENSIONED. Ⓡ	NOT REQD	NOT	REQD	JAK/gl 5-18-66	BW	5-18-66 Ⓡ

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10838	A
SCALE NONE		SHEET 1.10	

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10838-12	E	CLIP	AL ALY SH	QQ-A-250/12	7075	.040X4 3/8X4 5/8	T6	88	3B
								LDW280-10838-11	E	CLIP	AL ALY SH	QQ-A-250/12	7075	.040X4 3/8X4 5/8	T6	88	3B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
			88	ANODIZE	LSP14-9030	T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10838	A

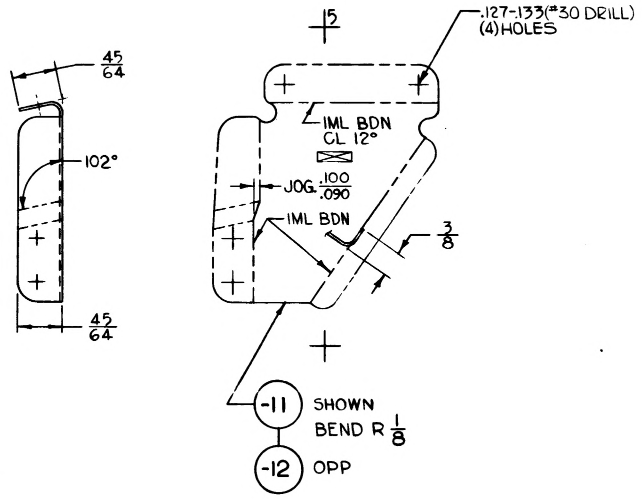
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



45/64
102°
45/64
15
.127-.133(#30 DRILL)
(4) HOLES
IML BDN
CL 12°
JOG .100/.090
IML BDN
3/8
-11 SHOWN
BEND R 1/8
-12 OPP

MANUFACTURING OPERATIONS	
NOTES CHECKED ✓ APPLY TO THIS DWG.	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ±1/32	✓
TOLERANCE ON LOFTED DELINEATIONS IS ±1/32	✓
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒	✓

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
LEM	SIZE C	CODE IDENT NO. 26512	LDW280-10838	R A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

LDW280-10838 A

LDW280-10838 A

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GMO 33 2 REV 3-65

*

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEC280 | EO NO 295
CONTROL INFO NO. LDW280A 0657

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS * THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4 34

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10789	A3	SEE DRAWING
-10790	B1	
H 10792	C1	
-10796	A1	
-10798	B1	
-10800	B2	
H 10801	A1	
H 10802	B1	
H 10804	B1	
-10806	C1	
-10808	A1	
P 10809	B2	
-10811	B2	
-10813	B1	
-10814	B1	
-10815	A4	
-10817	A1	
-10838	B1	
-10846	C1	
-10927	B1	
-10934	A1	
-10953	B1	
-10954	A1	
-10955	A1	
-10961	A3	
P 10966	A4	
-10970	A1	
-10973	A1	
-10974	A1	
-10976	A1	
-10977	A1	
-10979	A1	
LDW280-10980	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE: C | LE | 108

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM-9(39)
LEM		LEM-10(40) LEM-11(41)	LEM-12(42)
LEM		LEM-13(43) LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: NOT REQ'D REWORK SCRAP
APPROVED BY: VL
DATE: 9/13/66
GROUP LEADER: —
STRESS GROUP: MW
PROJ ENGRG: PMC 10-6-66
GOVT: AC 10-3-66
PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LEO280
EO NO.: 295

ISSUED BY L. DE TURRIS 7-18-66 X 1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 35

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GRUMMAN AIRCRAFT ENGINEERING CORP.

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 931

CONTROL INFO NO. LDW 230B2702

(1) ADD "TEST 75" EFF. & N/A LSK 280-11193 TO THE FOLLOWING PARTS:

PART Nº *	CHANGE LTR	QTY	TITLE
LDW 280-10227-11,-12 -27 & -28	E2	1 EA	SEE DWG
-10545-11,-17-19	B2	1 EA	
-10488-11	F1	1	
-10497-11	B2	1	
-10498-15	D4	1	
-10450-13-16	C3	1 EA	
-10480-11,-12,-13-14	B2		
-10481 - 15-16-19-20	C2		
-10510-12,-21,-22,-23-24	C2	1 EA	
-10443-11,-13-15	C1	1 EA	
-23124-1,-2	A2	1 EA	
-53050-3	B6	1	
-10486-11,-13,-23	C2	1 EA	
10444-15	C2	1	
-10445-15	C2	1	
-10519-11	B2	1	
-54017-1	B1	1	
-10838-11,-12	B2	1 EA	
-11182-11	A2	3	
-11182-13		1	
LDW 280-23028-1	E6	1	
LDW 280 M-10840-1	B3	1	
LDW 280M 10479-1	A2	4	
LDW 280M-10534-1	B3	1	
-10177-1,-2	E1	1 EA	
-10177-3		4	
10264-1	C1	1	
10484-1	C1	1	
-10844-1	A5	1	
-10501-1	C1	1	
-10432-1,-2	B2	1 EA	
-10433-1	B2	1	
-10447-1	C3	1	
-2		2 EA	
LDW280M-10700-1	B4	1	SEE DWG

(2) ADD "TEST 75" EFF & N/A LDW280-54017 TO

LDW 280-54022-1	B6	1	SEE DWG
LDW 280M-10383-7	D8	1	SEE DWG

(3) ADD "TEST 75" EFF. TO THE FOLLOWING PARTS

PART Nº	CHANGE LTR	NEXT ASSY	QTY	TITLE
LDW280-10362-11	B3	LDW 280-53050	2	SEE DWG
LDW280-10362-13			1	
LDW280-10362-11,-13		LSK-280-11193	1 EA	
LDW280M10406-1	C1	LDW280-53050	1	
LDW280M10406-2		LSK280-11193	1	
LDW280M10407-5	C2	LSK280-11193	1	
LDW280M10407-7		LDW280-53050	1	
LDW 280-10361-12, -17,-18	B3	LSK280 -11193	1 EA	
LDW280-10361- 11,-13,-15,-16,-17,-18		LDW 280- 53050	1 EA	
LDW280-10361-19			2	
LDW280-10360-14	B3	LSK280-11193	1	
LDW280-10360-11, -12		LDW 280- 53050	1 EA	SEE DWG

(4) ADD "TEST 75" EFF. & N/A LDW 280-53050 TO THE FOLLOWING PARTS

PART Nº	CHANGE LTR	QTY	TITLE
LDW280M-10404-1	C4	1	SEE DWG
LDW 280M-10403-1	C3	1	SEE DWG

(5) ADD "TEST 75" EFF & N/A LDW 280-23028 TO THE FOLLOWING PARTS

PART Nº *	CHANGE LTR	QTY	TITLE
LDW280-10354-13,-15,-17	B2	1 EA	SEE DWG
LDW280-10355-11,-13,-14,-15	B3	1 EA	
LDW280M10559-11 & -12	A2	1 EA	
LDW280-10482-11,-13,-15-17	A2	1 EA	
LDW 280M10381-1	C4	1	
LDW 280M 10382-1	C3	1	
LDW 280-10554-11	B2	1	SEE DWG

(6) ADD "TEST 75" EFF, N/A LDW 280-23124, TO

LDW280M10414-1 & -2	B3	1 EA	SEE DWG

(7) ADD "TEST 75" EFF N/A LDW 280-54022 TO THE FOLLOWING PARTS

PART Nº *	CHANGE LTR	QTY	TITLE
LDW280-10844-1	C2	1	SEE DWG
LDW280M-10397-3	E1	1	SEE DWG

*

DETAIL SPEC REQ ☐ | CL II ENGRG CHG ☐ | CL I ENGRG CHG ☑

LCD 2800

⑤

REASON FOR EO: PARTS REQUIRED FOR DOCKING TUNNEL TEST ASSY.

DESCRIPTION OF EO: FOR DASH Nº * ADDED TEST 75 ASSY REQ'TS

GAEC EO RELEASE: H.F 4/30/68

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONT. UNIT NO.
LM		TEST (75)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

APPROVED BY									
DATE	5/28/68			-28-68	3-29		3/29/68	4-30-68	
—	VDI	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG		

PRIORITY: C

DRAWING TITLE: SEE DWG

DRAWING NO. LEO 280

EO NO. 931

3/29/68
ISSUED BY R. SMALL 3/26/68 X7035 SECTION VDI GROUP NO. 335 PL 25

REVISIONS

CHANGE	ITEM NO.	SHEET NUMBER	SH CHG LTR	GRUMMAN INFO ONLY DCRF OR ECP	DET. SPEC.	CLASS I	CLASS II	ENGRG ORDER IBCC NO.	DESCRIPTION	EFFECTIVE ON MILITARY NUMBER	DISPOSITION OF EXISTING PARTS REWORK	SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOV'T APPD

MODEL	EFFECTIVITY	NEXT ASSY	REQD PER APL
LEM	LTA-8	LDW280H28143	
LEM	LEM-1 & LEM-2	LDW280H28143	

PART NUMBER LDW280-10839

GAEC SCH. NO. 35-

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED:
FRACTIONS – DECIMALS – ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	✓
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

GRUMMAN REL INFO

265	E(00) MP12		

DRAWN BY	J. Castelli
LAYOUT BY	R.A. Bracco RDB 2-17-66
CHECKED BY	
GR LEADER	2/17/66
VDI	1/17/66
STRUCTURE	3/1
WEIGHTS	3/18
PROJ ENGR	3-25-66
APPD	3/30/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

3

FABRICATION PROCEDURE

ASCENT STAGE - RCS VALVE SUPPORT - LDW280H28143

CONTRACT NO. NAS 9-1100 DOCUMENTATION TYPE II

CODE IDENT NO.	SIZE	
26512	B	LDW280 10839

SCALE None CONTR. LINE ITEM NO. 1 SHEET 1 of 2

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SCOPE: Process and Assembly Procedure

REFERENCE: Drawing Number LDW280H28143
LSP14-7022

EQUIPMENT & MATERIAL: FM1000 Adhesive System - MIL-A-5090D, Type I, Bloomingdale Department, American Cyanamid, Havre de Grace, MD.
Adhesive Film - FM-1000, .06 lbs/ft.²
Adhesive Tack Primer - BR-1009-8
Aluminum Honeycomb Core - MIL-C-7438C - Source Hexcel Corporation, Havre de Grace, MD.
Honeycomb Corporation of America, Bridgeport, Conn.
American Cyanamid, Bloomingdale Department, Havre de Grace, MD.

ENVIRONMENTAL CONTROL: Bonding shall be performed in an area controlled within the range of 65°F to 95°F. The relative humidity of the area shall be maintained at 15 to 80%. The cleanliness of the area shall be carefully maintained.

PROCEDURE:

A. PREFIT OF PARTS

Assemble the tool and prefit the components. All surfaces to be bonded shall be free of burrs, dimples, and waves and shall be prefitted so that only light pressure (1-2 psi) is required to give continuous contact of mating surfaces. The prefit must be completed prior to the cleaning of details for the bonding operation.

B. CLEANING AND PRETREATMENT

1. Aluminum Skins:
    - a. "Remove all ink and stencil from the details by wiping with a safety solvent.
    - b. The skins must be wired into racks that will preclude the possibility of scratches or "oil canning".
    - c. Clean and pretreat the detail part in accordance with LSP14-7022, paragraphs 3.1.1 and 3.1.4 (indicate time and date of pretreatment on the route card).
2. Degrease and dry honeycomb core in accordance with LSP14-7022, paragraph 3.1.1.
3. Clean white gloves shall be worn when handling cleaned parts. Cleaned parts requiring transportation or storage prior to the adhesive application shall be protected from contamination with clean Kraft paper, polyethlene film, or special container.

EFFECTIVITY	DESCRIPTION	GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., N. Y.		
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4. Apply the primer to the parts within 12 hours of cleaning.
5. Adhesive primed parts shall be handled with clean white gloves and force dried within 24 hours. Parts not bonded immediately after drying shall be stored in a clean, dry area where the temperature does not exceed 100°F and where the parts will be kept free from dust, dirt, oil, grease, wax or other foreign material. If necessary, the parts may be wrapped in clean Kraft paper or polyethylene sheet in lieu of the clean dry area required above. Parts stored in excess of 30 days shall be visually inspected by Quality Control for contamination.
6. NOTES:
   - a. Stir primer thoroughly before use.
   - b. Indicate time and date of primer application on the route card.
   - c. The requirements that follow shall apply for adhesive application and handling.

C. PRIMER APPLICATION TO SHEET METAL DETAILS.

1. Spray the BR-1009-8 tack primer in one crosscoat on all of the surfaces to be bonded except the core. Fluid adjustment on the gun should be such as to result in a wet film deposit. The coating shall be sufficient to provide complete coverage and shall met exceed 3 mils, dried film thickness.
2. Allow the sprayed details to dry at ambient temperature for a minimum of 10 minutes.
3. Force dry the primed details for 60 $^{+10}_{-0}$ minutes at 150°F ±10°F.

D. ADHESIVE FILM APPLICATION.

1. Clean white gloves shall be worn when handling adhesive film. All unused adhesives shall be returned to their containers and stored at proper temperatures as soon as possible. Contaminated or damaged adhesives and primers shall be discarded.
2. Where time allowances specified herein are exceeded, the assemblies shall be further processed or reprocessed under the cognizance of the Process Engineer.
3. Enter time and date of adhesive application on the route card for the component part. This entry shall be certified by Inspection.
4. The date and hour of cleaning and pretreatment of the adhesive application, and the batch and roll number of adhesive applied shall be noted on a suitable traveler identified with the assembly serial number.
5. Adhesive film shall be applied to parts within 7 days after primer.
6. Apply FM-1000 adhesive film between all surfaces to be bonded.
7. The primer may be warmed with a low temperature heat gun to provide some tack of the adhesive film to the details.
8. Do not attempt to heat the film. The application of heat sufficient to soften the film will tend to cure the material.
9. Do not tack the film with the liquid primer. The valatiles in the primer will cause voids in metal-to-metal joints and film bubbling in a sandwich bond.

EFFECTIVITY	DESCRIPTION	GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., N. Y.		
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E. ASSEMBLY OF DETAIL PARTS.

1. Assemble the details as indicated on drawing No. LDW280H28143
2. Pull the edges of the core to make contact with the adhesive film at the Spacer block edges. Do not attempt to heat tack the film adhesive.

F. BONDING OF ASSEMBLY.

1. Locate thermocouples on the assembly as indicated on the Process Bonding Cycle Card.
2. Position open weave glass fabric over the assembly.
3. Bag and seal with Mylar or Nylon film and Presstite 155 tape or equivalent.
4. Place fixture with a Quality Control panel (see para. G.) in the autoclave and check bag seal with vacuum.

NOTE:

Full vacuum may be used but it must be decreased to 5 psi prior to applying air pressure in the next step.

5. Apply 5-15 psi air pressure and vent part to the atmosphere.
6. Apply pressure indicated on the bonding cycle card and raise temperature of assembly to 330°F. within 90 minutes.

NOTE:

If the heat up procedure cannot be completed within 90 minutes the assembly should be considered to have a minor discrepancy and acceptance of the bonding cycle should depend on satisfactory test results from the Quality Control specimens. If the assembly cannot be brought to temperature within 120 minutes it should be held for Material Review Board disposition.

7. Cure the assembly at 340°F. $^{+10^\circ F.}_{-10^\circ F.}$ for 60^{+10}_{-0} minutes under the pressure indicated on the bonding cycle card.
8. Cool to 150°F under the specified pressure.
9. The requirements that follow shall apply to the above bonding cycle.

CURING - GENERAL

1. The specific pressure used for the assembly shall be suitable for the nature of the part and be as specified by Manufacturing Engineering.
2. The adequacy of thermocouples shall be determined by bonding the first part using the designated bonding fixture under the conditions of temperature and pressure to be used in production. When satisfactory data is obtained and the necessary number of thermocouples determined, that number shall represent the requirement for use in production. The thermocouple temperature indicator, indicating the temperature of each unit by means of a selector switch, shall be closely observed. When the thermocouple with the lowest temperature reading reaches 330°F., the curing time shall begin. Temperatures shall be read for each thermocouple every 10 minutes during the bonding run. After removal from the bonding fixtures, parts shall be uniformly cooled to room temperature.

EFFECTIVITY	DESCRIPTION

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

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3. When positive pressure within the bag occurs during a non-vacuum autoclave bonding cycle above the abort temperature, continue the bonding cycle and take the following action as applicable.

   a. 0 to 4 psi, maximum - no action required
   b. 4 to 7.5 psi, occuring 20 minutes or more after the specified cure temperature has been reached, hold the part(s) in abeyance pending the testing of the Quality Control panel. Acceptable test results shall constitute acceptance of the pressure portion of the cure cycle.
   c. More than 4 psi occuring prior to 20 minutes of elapsed cure time or more than 7.5 psi occuring during the bonding cycle, Materials Review Board action shall establish the disposition of the part(s).

NOTE:

At no time shall the temperature exceed 350°F.

4. All metal to spacer block faying surfaces shall be structural adhesive bonded.

G. QUALITY ASSURANCE PROVISIONS.

Quality Control shall be responsible for assuring compliance with this procedure.

1. Receiving
   (a) Each batch lot of material required shall be inspected per Table I and identified on receipt.
2. Process Control
   (a) Panels processed in accordance with LSP14-7022 shall be laid up as shown in Figure I. Apply primer per note C. 3/4" wide along one 6 1/2" edge of each panel. Use adhesive film between surfaces to be bonded and cure one hour at 340° ±10°F. and 25 psi. Cool to 150°F. before releasing pressure.
   (b) Panels, when shear tested by the Quality Control Laboratory shall equal or exceed a 5 specimen average of 6000 psi minimum, with no single specimen less than 5500 psi.
   (c) Panels shall be tested at a frequency to insure all adhesive is tested within 168 hours prior to use. Suitable test records shall be maintained by the Quality Control Laboratory.
3. Inspection of Core Detail
   (a) Prior to preparation for assembly, the core detail LDW280H28143-13 shall be subjected to a visual inspection to determine the locations and extent of core delamination, if any.
   (b) Core details shall be considered acceptable for further processing if the above inspection shows that the core detail meets the requirements of Section H, Paragraph 3.
   (c) A photographic or radiographic record of this inspection shall be made noting the locations and extent of actual core delaminations.

H. END PRODUCT INSPECTION

1. Each part shall be inspected for conformance to drawing LDW280H28143.
2. a. Ultrasonic Inspection shall be used for detection of unbonded areas.
   b. Ultrasonic Inspection equipment shall be pulse-echo or resonance type. It shall be approved by the Grumman Quality Control Laboratory and operated only by personnel trained, qualified and approved by the Laboratory.

EFFECTIVITY	DESCRIPTION

GRUMMAN AIRCRAFT ENGRG CORP
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c. Equipment shall be calibrated immediately before use and checked every half hour during use against standard panels containing known voids.

d. Standard panels shall be prepared as shown in Figure IV using the same procedure as that given for the parts except voids shall be created by omitting adhesive and primer and substituting #181 glass cloth. Voids shall be indelibly marked on panel faces.

e: By use of stencils and layout dye each side of each part shall be marked with material thicknesses and the lines of demarkation between different thicknesses. These marks shall be removed at the conclusion of the inspection. The standard panels and the parts undergoing inspection shall be wiped clean with a lint free cloth to remove any contamination that could cause an erroneous reading. A coating shall then be applied to act as a coupling for the transducer. This coating shall not have a lubricating or mineral oil base, and after removal shall not leave a residue that can effect subsequent operations of the part.

f. Each part shall receive 100% inspection in ~~xxxxxxxxxxxxxxxxx~~ honeycomb areas. Any part giving indication of a void shall be either rejected or submitted for Material Review Board action.

g. If a bonded assembly requires repair, the repaired area must be re-inspected in accordance with the foregoing procedure.

3. a. Each part shall receive 100% radiographic inspection.

b. Within an 8" diameter round normal to cell axis, the number of visible defects shall not exceed 9 delaminated or unbonded cells or cells with a node bond width of less than .070 with the further limitation that there shall be no more than 3 such cells adjacent on the same ribbon.

c. Within the same 8" round there shall be no more than 45 partially delaminated cells (defined as having a node bond width of less than .080" but more than .070") with the further limitation that there shall be no more than 4 such cells adjacent on the same ribbon.

d. There shall be no crushed or split cell walls.

e. Within any 8" length of core splice or edge bond, there shall be no more than 20% unbonded length except that any individual unbonded length shall not exceed 1/2".

f. The inspection record obtained in Section G Paragraph 3c shall be used in conjunction with the records of this section to differentiate between apparent delaminations and actual delaminations.

4. a. With each lot of parts bonded in the autoclave simultaneously fabricate a 10" x 17 1/2" test panel per Figure II. Identify the panel with the production parts and submit the panel to the Quality Control Laboratory for testing. Suitable test records shall be maintained by the Quality Control Laboratory.

b. The 10" x 17 1/2" panel shall be cut into 3" x 17 1/2" panels as shown in Figure II. Two 3" x 17 1/2" panels when long beam shear tested as shown in Figure III shall equal or exceed the specified value of 1372# min.

c. The third 3 x 17 1/2" panel when tested on each side in the climbing drum peel tester per MIL-STD-401A shall equal or exceed 100 in.#/3 in. width minimum average, with no single value below 80 in. #/3 in. width.

I. TEST REQUIREMENTS - COMPLETED ASSEMBLY - Not Required

EFFECTIVITY	DESCRIPTION	GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., N. Y.		
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TABLE I

MATERIAL	PROPERTY	VALUE	TEST FREQUENCY	TEST METHOD
Aluminum Core (MIL-C-7438C) 3)	Dimensions Workmanship	Drawing Requirements	Each Piece	Optional
	Cell Size			Visual Mechanical
	Density	Drawing Requirements ±10%	1)	Measure and weigh. Divide weight by volume.
	Compression flatwise	MIL-C-7438C	1)	MIL-C-7438C
	Core Delamination	12.5 pounds	1) 2)	MIL-C-7438C
Adhesive Primer BR-1009-8	Non Volatile Content	20% ±1	Each Lot	Weigh suitable container. Place 3 to 4 1/2 grams of primer in container and weigh. Heat at 180°F ±5F° for 1 hour breaking any skin formed during baking. Cool and reweigh. % Non-volatile = cured weight over original weight X100
	Standard Temperature Shear	1 specimen min. 5500 psi 5 specimen average 6000 psi min.	Each Lot	Prepare specimen per G-2 (a). Test per MIL-A-5090D.
FM 1000 Film	Uncured Film Weight	.060 ±.005 lbs. ft.^{2}	Each Lot	Weigh two 3 x 3 pieces of film in grams $\frac{\text{Wt. of uncured film X 16}}{454}$ = Cured film weight lbs/ft.
	Standard Temperature Shear	1 specimen min. 5500 psi 5 specimen average 6000 psi	Each Lot	Prepare specimen per G-2 (a). Test per MIL-A-5090D.

1) Each batch lot, or at the discretion of the Quality Control Laboratory, an approved sampling plan per MIL-STD-105A shall be used for Test Frequency.
2) Core Delamination Tests need not be performed on Hexcel Co. core.
3) Suitable test records shall be maintained by the Quality Control Laboratory.

NOTE: Where any of the foregoing tests require the use of material other than those being tested, they shall be from a previously qualified lot.

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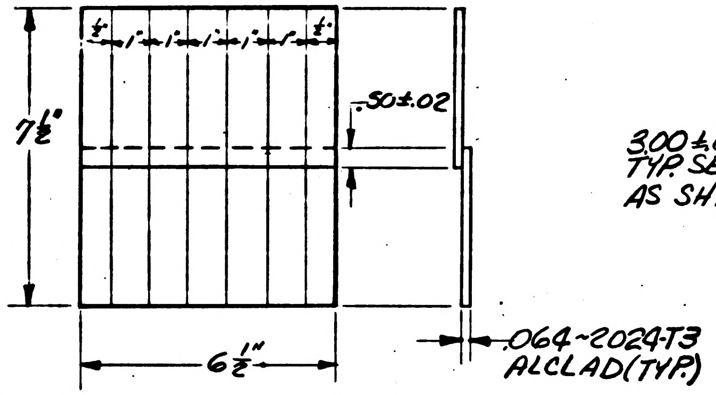
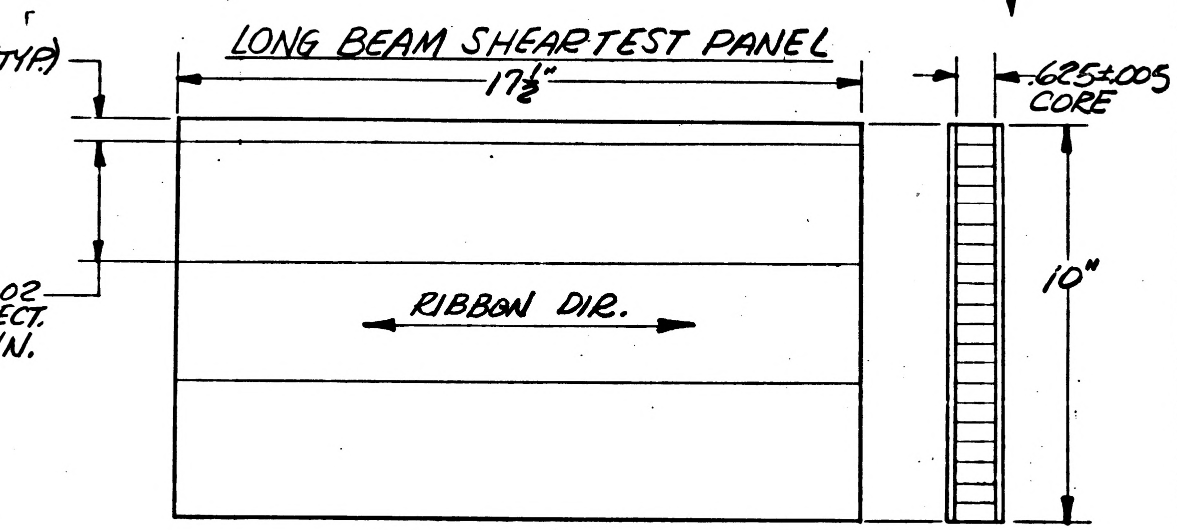
TENSILE TEST PANEL



1/2
1
1
1
1
1
1/2
.50±.02
7½"
6½"
.064~2024-T3
ALCLAD(TYP.)

FIG. I

LONG BEAM SHEARTEST PANEL



1/2 (TYP.)
17½"
3.00±.02
TYP. SECT.
AS SHN.
RIBBON DIR.
.625±.005
CORE
10"

FIG. II

LONG BEAM SHEAR TEST

PER MIL-STD-401A

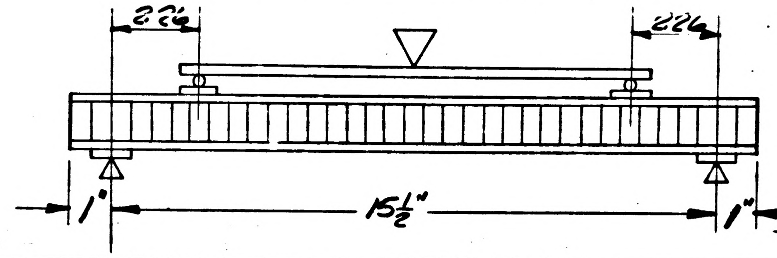


FIG. III

CORE MATERIAL	FACING MATL	TEST VALUE (MIN. LBS)
6.0-1/4-30P(5052)	.020-7075-T6 ALCLAD	1372

EFFECTIVITY	DESCRIPTION

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

CODE IDENT NO.	SIZE	
26512	B	LDW 280 10839
SCALE NONE		SHEET 8 of 9

ENG 386

THIS IS AN ORIGINAL DRAWING

01

NAS 9-1100

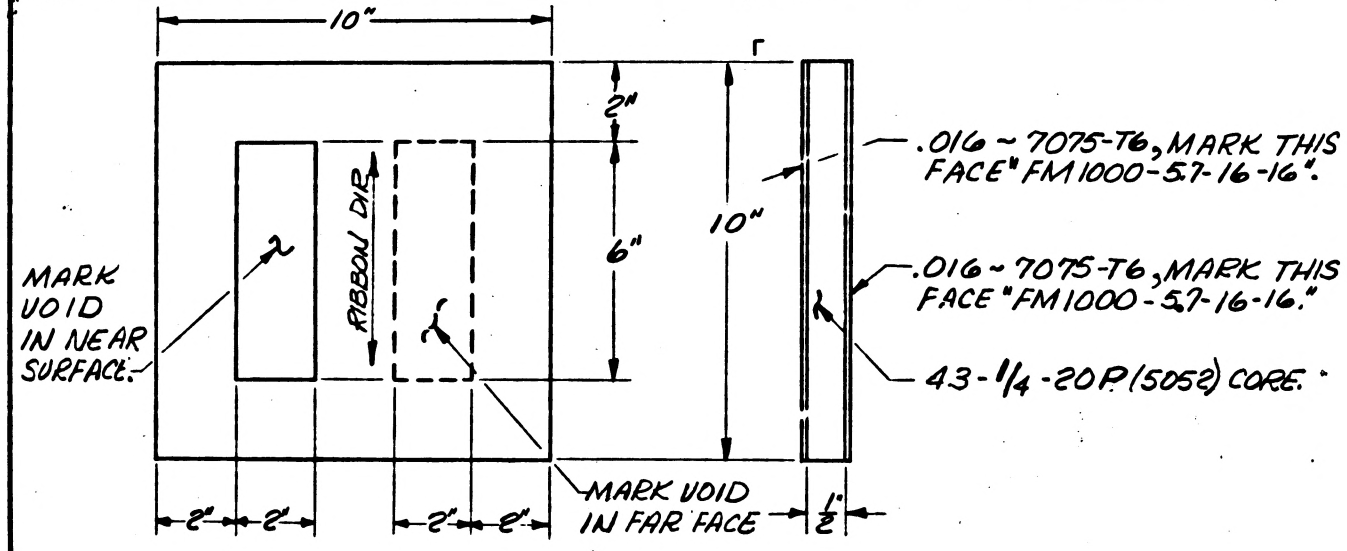

10"
2"
6"
10"
RIBBON DIR.
MARK VOID IN NEAR SURFACE.
MARK VOID IN FAR FACE
2" 2" 2" 2"
1/2"
.016 ~ 7075-T6, MARK THIS FACE "FM1000-5.7-16-16".
.016 ~ 7075-T6, MARK THIS FACE "FM1000-5.7-16-16."
4.3-1/4-20P.(5052) CORE.

FIG. IV

ULTRA SONIC STANDARD PANELS.

EFFECTIVITY	DESCRIPTION	GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., N. Y.
		CODE IDENT NO. 26512 · SIZE B · LDW 280 10839
		SCALE NONE · SHEET 9 of 9

ENG 306

EAB.

THIS IS AN ORIGINAL DRAWING

01

NAS 9-1100

LDW280-10840

PART NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM

PART NO. LDW280-10840-13

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53027	LEM-3(33)	3
LEM	LDW280-23027	LTA-3(13)	3

PART NO. LDW280-10840-11

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53027	LEM-3(33)	2
LEM	LDW280-23027	LTA-3(13)	2
		32-5	

③

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED —

LAST DASH NO. USED -13

GRUMMAN REL INFO

PRIM NO.	LE (001)
215	PP12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.010 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	LOZINSKI	2/9/66
LAYOUT BY	LOZINSKI	2/9/66
CHECKED BY	JRT	2/10/66
GR. LEADER	B. PHILLIPS	2/9/66
VEH DES INT	PAULSRUD	2/9/66
STRUCTURES	FEB	2/15/66
STRUCTURES		
WEIGHTS	ROBESCH DJL	2/16/66

PROJ ENGR KRAFT 2/17/66
REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT - MID SECT - X310.00 DECK - Z 27.00

SIZE B
CODE IDENT NO. 26512
LDW280-10840
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE LAST REVISION NO CHANGE. SH. 1OF4 WAS 1OF1. D.Z.				JAEGGI 5-12-66		

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-66

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10840
SCALE NONE		SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10840-13	E	ANGLE	AL ALY SH	QQ-A-283	7075	.040×1 3/8×3 1/8	T6	88	
		LDW280-10840-11	E	ANGLE	AL ALY SH	QQ-A-283	7075	.040×1 3/8×3 1/8	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030
T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

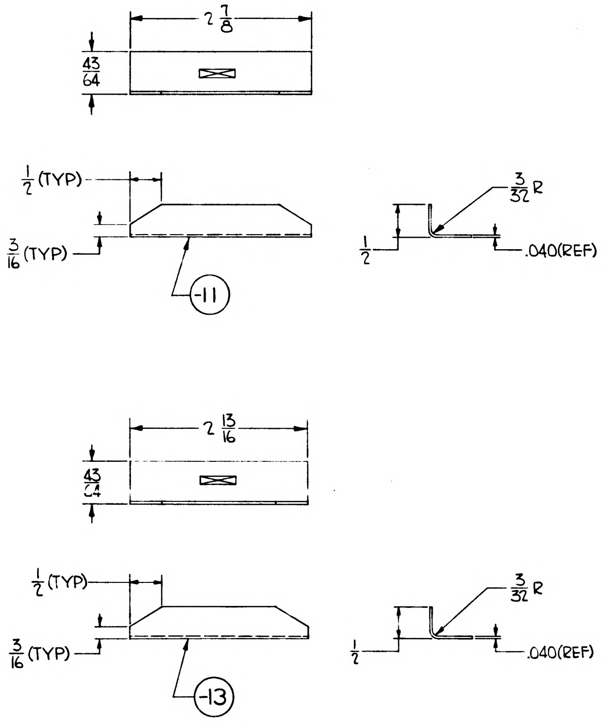
SIZE B
CODE IDENT NO. 26512
LDW280-10840
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.



MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LEM	C	26512	LDW280-10840
	SCALE FULL		SHEET 300

LDW280-10840

LDW280-10840

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28075	LTA-8(18)	1 EA
LEM	LDW280-51075	LEM-1(31)	1 EA
LEM	LDW280-52075	LEM-2(32)	1 EA

PART NO. LDW280-10841-11-13-15 -17 & -19

GAEC SCH NO. 31-3

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -19

GRUMMAN REL INFO

PRIM NO. VE001

215 MP12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY GENTILE 2·23·66

LAYOUT BY MANOS 3-18-66

CHECKED BY WCG 3/19/66

GR. LEADER J. Pusateri 3/19

VEH. DES. INT. 3/19

STRUCTURES 3-19

STRUCTURES

WEIGHTS D. Rabach 3-21

RELIABILITY

PROJ ENGR 3-22-66

REL GROUP C. Cusmano 3-21

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DOUBLER
ASCENT STAGE ~ FACE ASSY

SIZE B

CODE IDENT NO. 26512

LDW280-10841

SCALE NONE

SHEET 1.00 OF 3

ENG 77.1 9-64

01

NAS 9-1100

QTY PER ASSEMBLY						CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
							LDW280-10841-19	E	DOUBLER	AL ALLOY SH	QQA-283	7075-T6	SEE NOTE 2×4 1/4×6 7/8	NONE	88	
							-17						5 3/8×7 3/8			
							-15						4 3/8×7 3/8			
							-13						4 3/4×7 3/8			
							LDW280-10841-11	E	DOUBLER	AL ALLOY SH	QQA-283	7075-T6	SEE NOTE 2×8 5/8×12 1/8	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10841

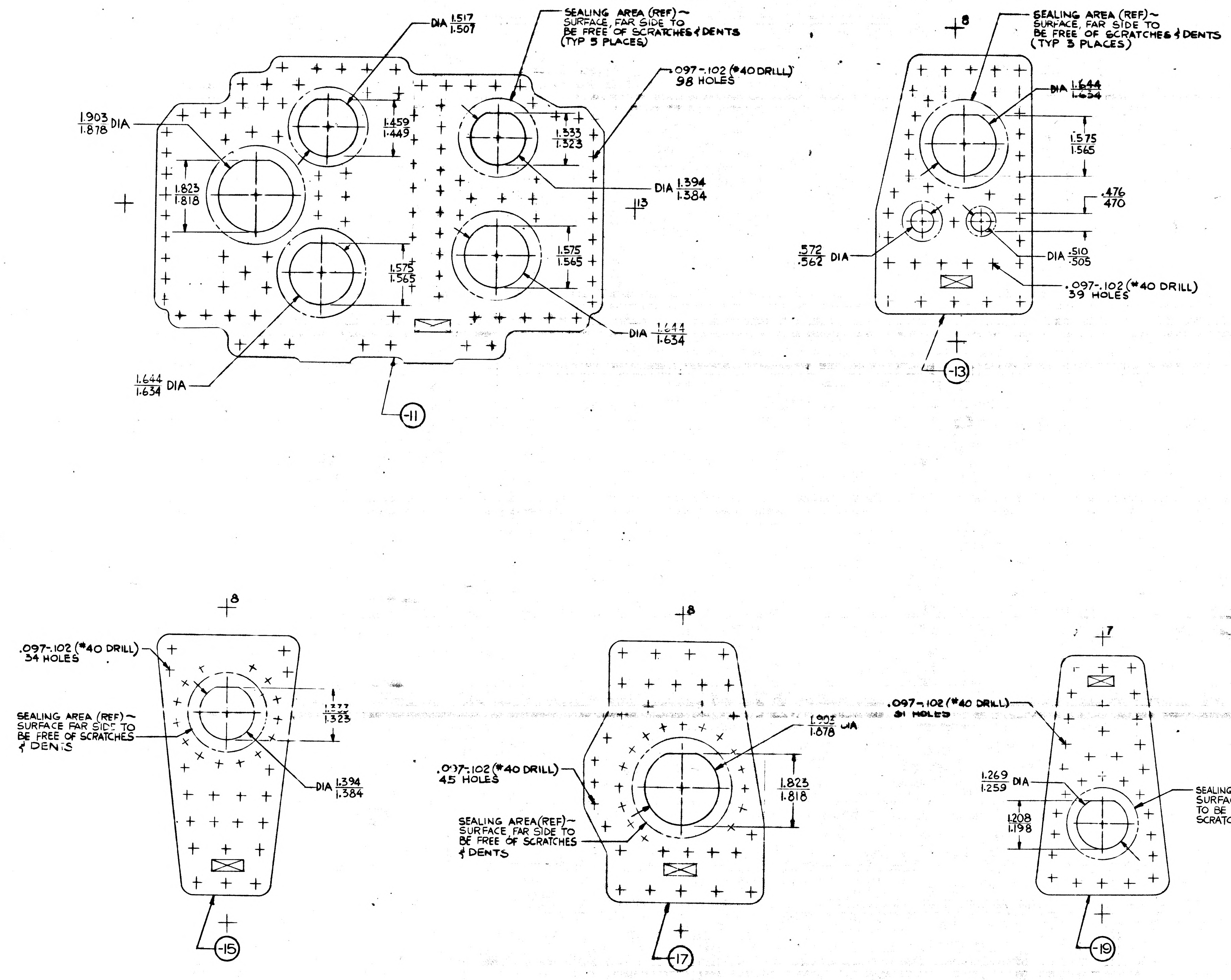
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


DIA 1.517 / 1.507
SEALING AREA (REF) ~ SURFACE, FAR SIDE TO BE FREE OF SCRATCHES & DENTS (TYP 5 PLACES)
.097-.102 (#40 DRILL) 98 HOLES
1.903 / 1.878 DIA
1.459 / 1.449
1.333 / 1.323
1.823 / 1.818
DIA 1.394 / 1.384
13
1.575 / 1.565
1.575 / 1.565
DIA 1.644 / 1.634
1.644 / 1.634 DIA
-11
8
SEALING AREA (REF) ~ SURFACE, FAR SIDE TO BE FREE OF SCRATCHES & DENTS (TYP 3 PLACES)
DIA 1.644 / 1.634
1.575 / 1.565
.476 / .470
.572 / .562 DIA
DIA .510 / .505
.097-.102 (#40 DRILL) 39 HOLES
-13
8
.097-.102 (#40 DRILL) 34 HOLES
1.333 / 1.323
SEALING AREA (REF) ~ SURFACE FAR SIDE TO BE FREE OF SCRATCHES & DENTS
DIA 1.394 / 1.384
-15
8
1.903 / 1.878 DIA
1.823 / 1.818
.097-.102 (#40 DRILL) 45 HOLES
SEALING AREA (REF) ~ SURFACE FAR SIDE TO BE FREE OF SCRATCHES & DENTS
-17
7
.097-.102 (#40 DRILL) 31 HOLES
1.269 / 1.259 DIA
1.208 / 1.198
SEALING AREA (REF) ~ SURFACE FAR SIDE TO BE FREE OF SCRATCHES & DENTS
-19

35

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS
2. MATERIAL TO BE HAND PICKED FREE OF SCRATCHES & DENTS. FOR-13,-15,-17,&-19 .040 GAGE, FOR-11 .100GAGE

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ±1/32	✓

0 1

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LEM	E	26512	LDW280-10841
	SCALE FULL		SHEET 3.00

LDW280-10841

LDW280-10841

FOR PHOTO REPRODUCTION 1 K-2

LDW280-10842 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

LEM	LDW280-28135	LEM-3(33)	1EA
LEM	LDW280-28135	LEM-2(32)	1EA
LEM	LDW280-28135	LEM-1(31)	1EA
LEM	LDW280-28135	LTA-8(10)	1EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10842-11,-13, -15,-17,-18&-19		GAEC SCH NO. 31-1	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -19

GRUMMAN REL INFO

PRIM NO.	LE(001)		
215	MP12A		JRS

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM #1

DOCUMENTATION TYPE II

DRAWN BY	BRANDT 3-3-66	RELIABILITY	
LAYOUT BY			
CHECKED BY			
GP LEADER	PHILLIPS 3/4/66		
VEH-DES-INT	BISCHOFF 3/7/66		
STRUCTURES	FEB BW 3/16/66	PROJ ENGR	C.W. RATHKE 3/19/66
STRUCTURES	HILDERMAN 3/16/66	REL GROUP	A.CARAMANICA 3/23/66
WEIGHTS	A.ROBESCH 3/16/66 DJL		

R

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIPS
ASCENT-MIDSECT-Y17.25C-BAND FILTER

SIZE	CODE IDENT NO.		
B	26512	LDW280-10842	A
SCALE	NONE	SHEET 1.00 OF 4	

THIS DWG SUPERSEDES LDW280-10842 "NO CHANGE" 3-23-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
A	1	1,1.10,2&3							RETRACED NO CHANGE LAST REVISION NO CHANGE. SH 1 OF 4 WAS 1 OF 1. LOFTED DWG WAS DIMENSIONED. Ⓡ				JAEGGI 5-13-66		

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10842	A
SCALE NONE		SHEET 1.10	

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10842-19	E	CLIP	AL ALLOY SH	QQ-A-283	7075	.032×2 3/8×2 1/2	T6	88	
		-18	E					.032×2×2 3/8			
		-17	E					.032×2×2 3/8			
		-15	E					.032×2×2 3/8			
		-13	E					.032×2×2 3/8			
		LDW280-10842-11	E	CLIP	AL ALLOY SH	QQ-A-283	7075	.032×2 1/8×2 1/8	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP-14-9030
T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

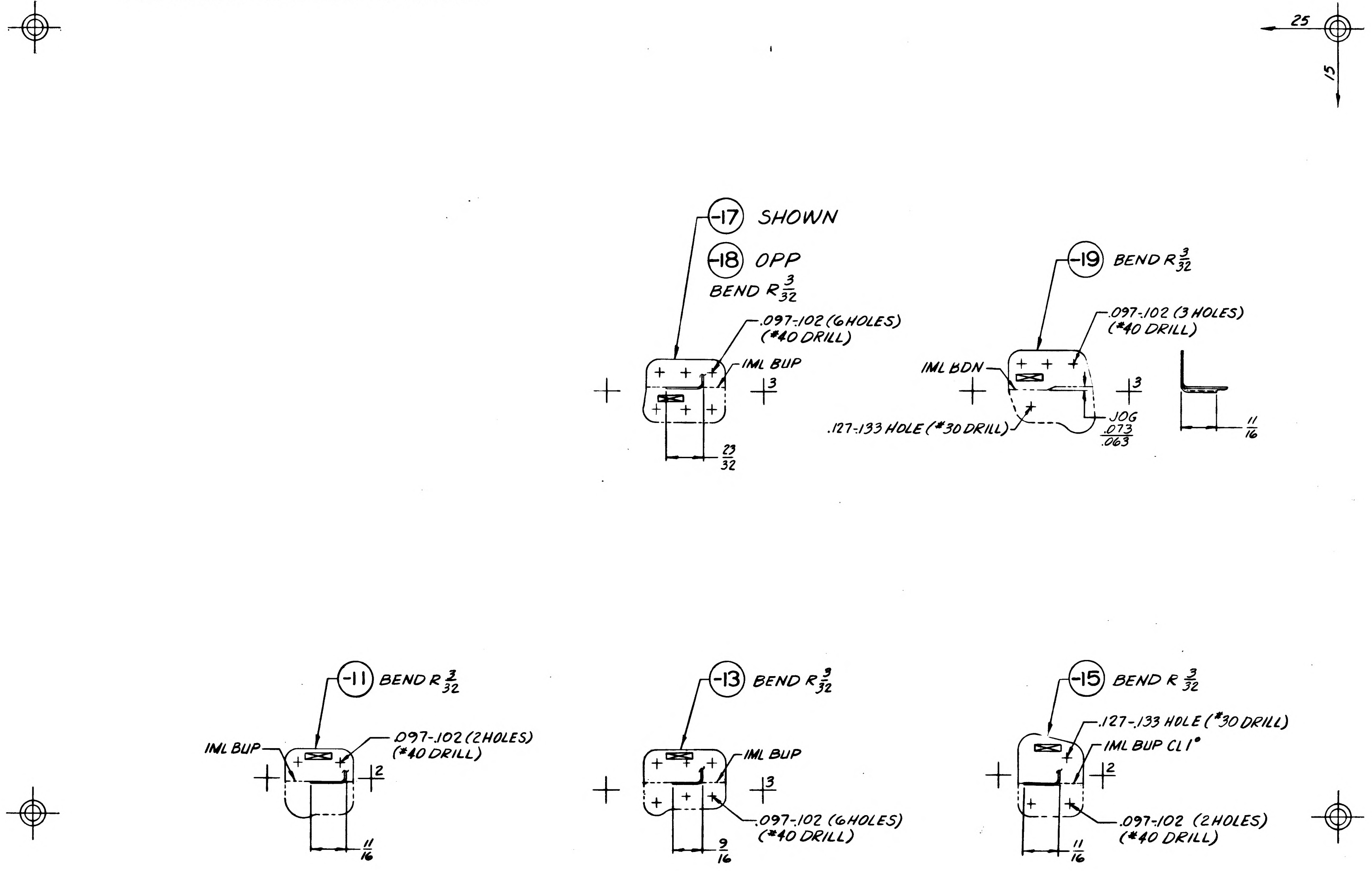
SIZE	CODE IDENT NO.		
B	26512	LDW280-10842	A
SCALE NONE		SHEET 2.00	

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.



25
15
-17 SHOWN
-18 OPP
BEND R $\frac{3}{32}$
.097-.102 (6 HOLES) (#40 DRILL)
IML BUP
$\frac{3}{}$
$\frac{23}{32}$
-19 BEND R $\frac{3}{32}$
.097-.102 (3 HOLES) (#40 DRILL)
IML BDN
.127-.133 HOLE (#30 DRILL)
JOG .073 .063
$\frac{11}{16}$
-11 BEND R $\frac{3}{32}$
IML BUP
.097-.102 (2 HOLES) (#40 DRILL)
2
$\frac{11}{16}$
-13 BEND R $\frac{3}{32}$
IML BUP
3
.097-.102 (6 HOLES) (#40 DRILL)
$\frac{9}{16}$
-15 BEND R $\frac{3}{32}$
.127-.133 HOLE (#30 DRILL)
IML BUP CL 1°
2
.097-.102 (2 HOLES) (#40 DRILL)
$\frac{11}{16}$

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
LEM	SIZE D	CODE IDENT NO. 26512	LDW280-10842	R A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION 1 K2

NAS 9-1100

01

LDW280-10843 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28135	LEM-3(33)	6
LEM	LDW280-28135	LEM-2(32)	6
LEM	LDW280-28135	LEM-1(31)	6
LEM	LDW 280-28135	LTA-8(18)	6
PART NO. LDW280-10843-19		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28135	LEM-3(33)	2
LEM	LDW280-28135	LEM-2(32)	2
LEM	LDW280-28135	LEM-1(31)	2
LEM	LDW 280-28135	LTA-8(18)	2
PART NO. LDW280-10843-15		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28135	LEM-3(33)	1EA
LEM	LDW280-23135	LEM-2(32)	1EA
LEM	LDW280-28135	LEM-1(31)	1EA
LEM	LDW 280-28135	LTA-8(18)	1EA
PART NO. LDW280-10843-11,-13,-17		GAEC SCH NO. 31-1	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED A-A

LAST DASH NO. USED -19

GRUMMAN REL INFO A

PRIM NO.	LE(001)		
215	MP 12A		TR 3-25 A

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ± 1/32 ±.010 ± 1/2

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM I

DOCUMENTATION TYPE II

DRAWN BY	BRANDT 3/2/66	RELIABILITY	
LAYOUT BY	BRANDT 3/2/66		
CHECKED BY			
GR.LEADER	W.PHILLIPS 3/4/66		
VEH-DES-INT	W.BISCHOFF 3/7/66		
STRUCTURES	FEB BW 3/16/66	PROJ ENGR	C.W. RATKHE 3/19/66
STRUCTURES	HILDERMAN 3/16/66	REL GROUP	A.CARAMANICA 3/23/66
WEIGHTS	D.ROBESH DJL 3/16/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT~MID SECTION-Y17.25 C-BAND FILTER

SIZE	CODE IDENT NO.		
B	26512	LDW280-10843	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

▲THIS DWG SUPERSEDES LDW280-10843 "NO CHANGE" 3-23-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00, 1.10, 2.00, 3.00						Ⓡ	RETRACED NO CHANGE LAST REVISION NO CHANGE. SH. 1 OF 4 WAS 1 OF 1. LOFTED DWG WAS DIMENSIONED.	NOT REQD	NOT	REQD	JAEGGI 5-23-66		6-7-66

FOR CONTINUATION OF REVISIONS SEE SHEET ________

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10843	A

SCALE NONE SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10843-19	E	RAD BLOCK	AL ALLOY SH	QQ-A-250/4	2024-T3	.063 x 1 5/8 x 1 3/4	NONE	88	
		-17		TEE	AL ALLOY EXTR	QQ-A-200/3	2024-T3511	DIE NO.62248 x 6 3/8	NONE	88	
		-15		CHANNEL	AL ALLOY SH	QQ-A-250/12	7075	.032 x 3 7/8 x 7	T6	88	
		-13		ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.045 x 4 1/8 x 16 1/8	T6	88	
		LDW280-10843 11	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.045 x 4 1/8 x 17	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10843	A

SCALE NONE

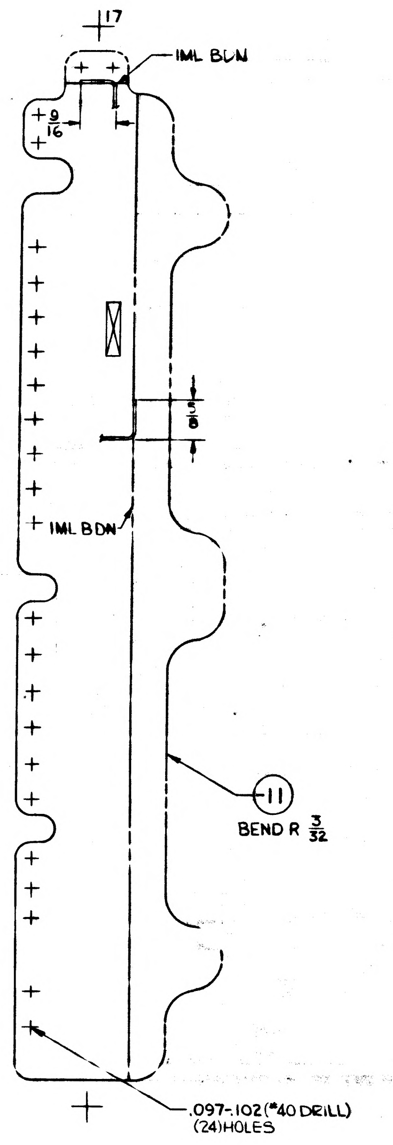
SHEET 2.00

ENG 77.2 7-65

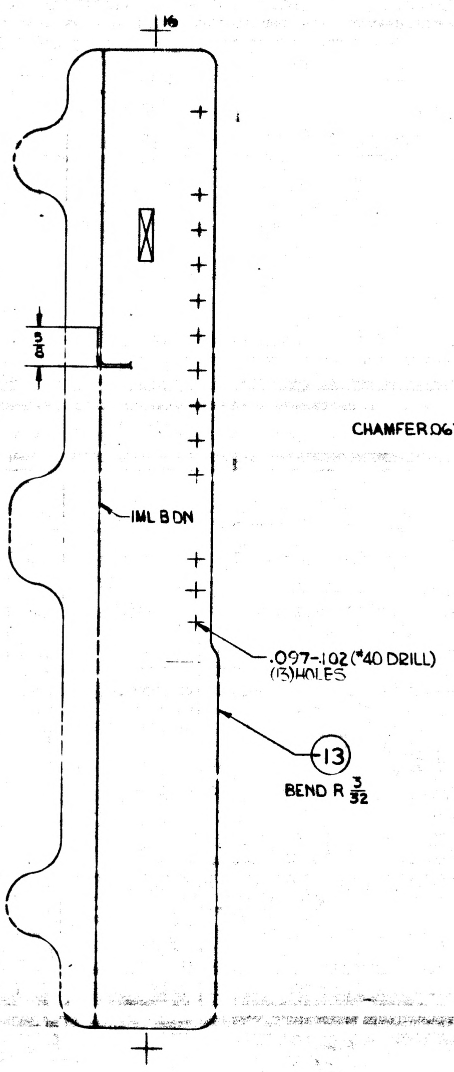
01

NAS 9-1100

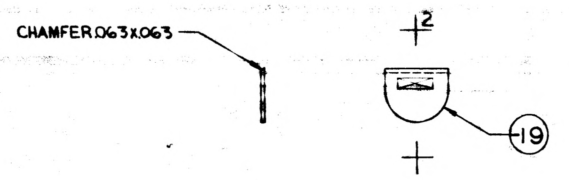
NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS



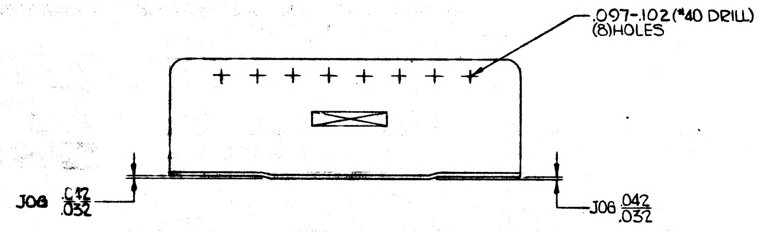
17
IML BDN
9/16
5/8
IML BDN
11
BEND R 3/32
.097-.102 (#40 DRILL)
(24) HOLES



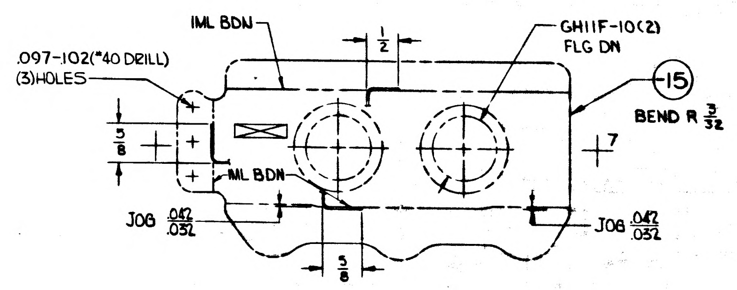
16
5/8
IML BDN
.097-.102 (#40 DRILL)
(13) HOLES
13
BEND R 3/32



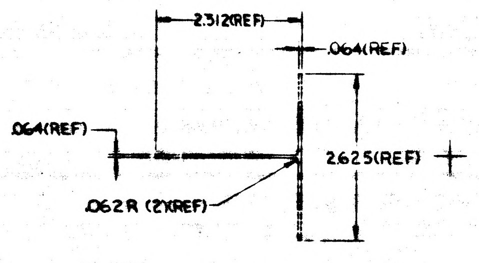
CHAMFER .063 X .063
2
19



.097-.102 (#40 DRILL)
(8) HOLES
J08 .042/.032
J08 .042/.032

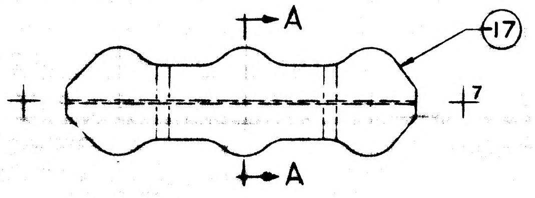


IML BDN
1/2
GH11F-10 (2)
FLG DN
.097-.102 (#40 DRILL)
(3) HOLES
15
BEND R 3/32
5/8
7
IML BDN
J08 .042/.032
J08 .042/.032
5/8



2.312 (REF)
.064 (REF)
.064 (REF)
2.625 (REF)
.062 R (2X) REF

SECTION A-A



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .000 .063R TO .250R ± .015 OVER .250R ± .000	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE E	CODE IDENT NO. 26512	LDW280-10843	R A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

LDW280-10843 A

LDW280-10843 A

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
					-3	-1											
					1			LDW280-10844-13	E	SKIN	AL ALLOY SH	MIL-A-8920A	2219-T81	SEE NOTE 5	NONE	NONE	
						1		LDW280-10844-3	E	SKIN (WELDED)				MAKE FROM -13	NOTE 3	NONE	
								LDW280-10844-1	E	SKIN (CHEM MILL)					CM 88	NOTE 9&10	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
CM	CHEM-MILL	LSP14-26100
76	ALODINE	LSP14-9010
88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10844	A

SCALE NONE

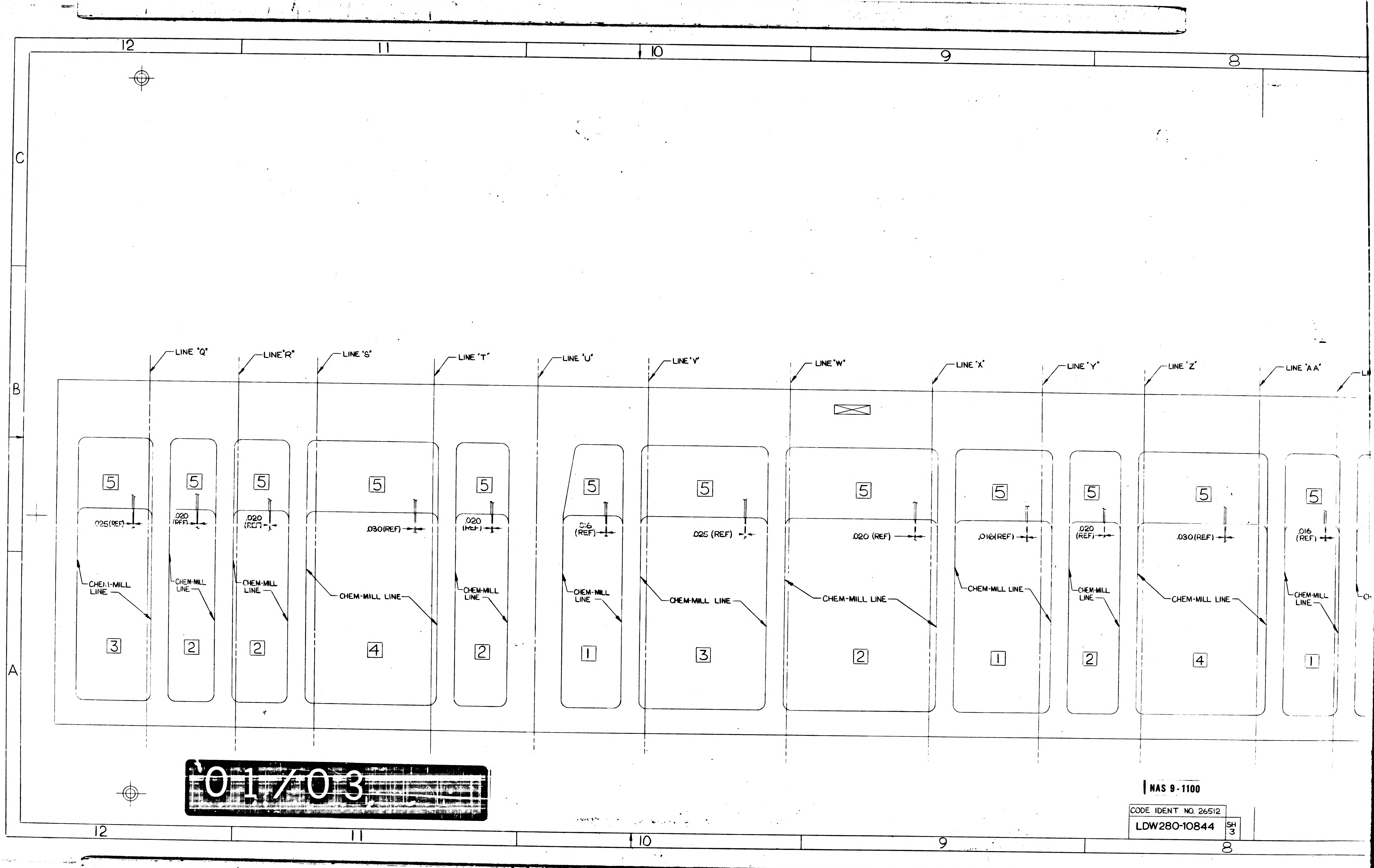
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

SH 3


12
11
10
9
8
C
B
A
LINE "Q"
LINE "R"
LINE "S"
LINE "T"
LINE "U"
LINE "V"
LINE "W"
LINE "X"
LINE "Y"
LINE "Z"
LINE "AA"
5
5
5
5
5
5
5
5
5
5
5
5
.025(REF)
.020 (REF)
.020 (REF)
.030(REF)
.020 (REF)
.016 (REF)
.025 (REF)
.020 (REF)
.016(REF)
.020 (REF)
.030(REF)
.016 (REF)
CHEM-MILL LINE
CHEM-MILL LINE
CHEM-MILL LINE
CHEM-MILL LINE
CHEM-MILL LINE
CHEM-MILL LINE
CHEM-MILL LINE
CHEM-MILL LINE
CHEM-MILL LINE
CHEM-MILL LINE
CHEM-MILL LINE
CHEM-MILL LINE
3
2
2
4
2
1
3
2
1
2
4
1
12
11
10
9
8

01/03

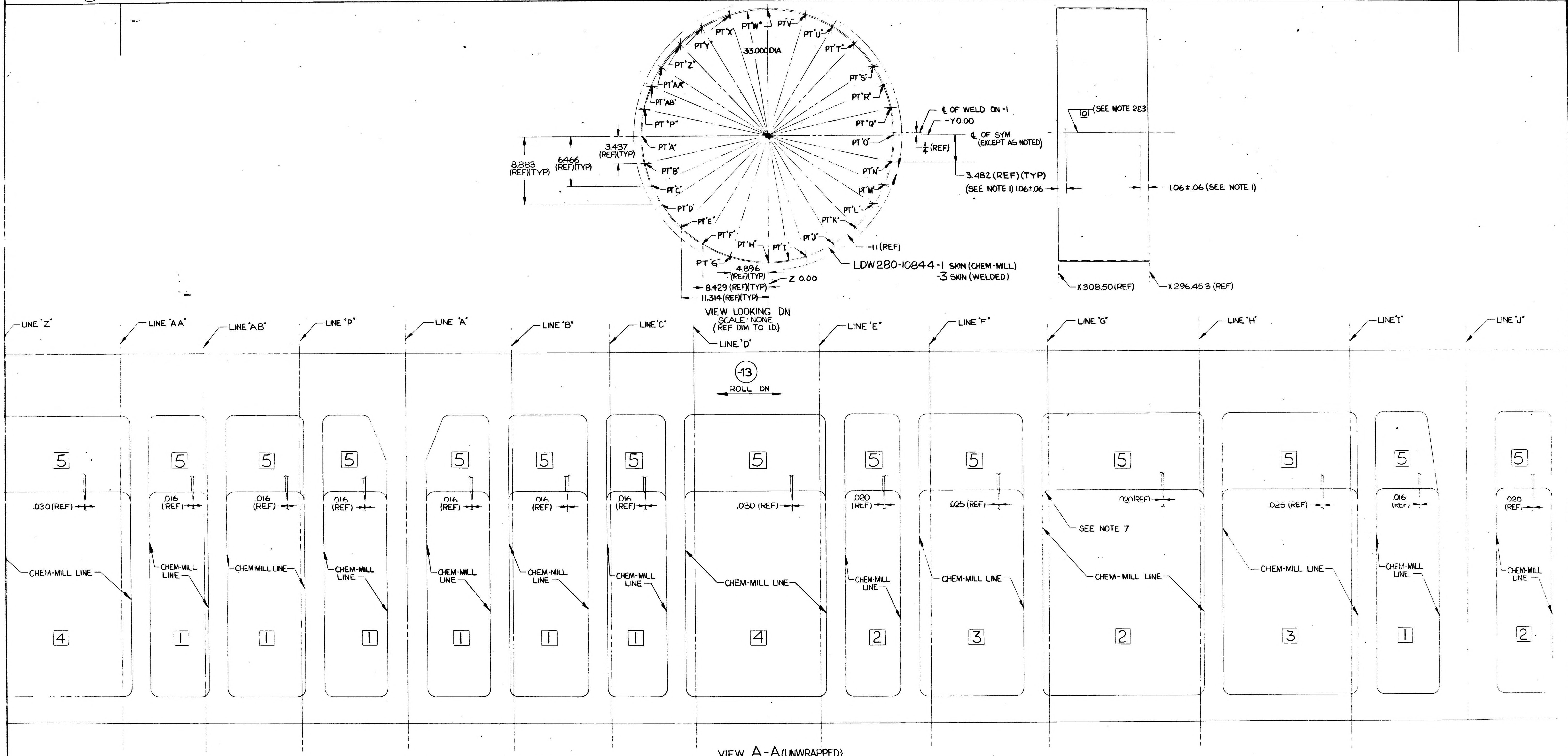
3/3

NAS 9-1100

CODE IDENT NO. 26512

LDW280-10844

SH 3



8
7
6
5
4
PT "W"
PT "V"
PT "X"
PT "U"
PT "Y"
PT "T"
33.000 DIA.
PT "Z"
PT "S"
PT "AA"
PT "R"
PT "AB"
PT "P"
PT "Q"
PT "A"
PT "O"
PT "B"
PT "N"
PT "C"
PT "M"
PT "D"
PT "L"
PT "E"
PT "K"
PT "F"
PT "J"
PT "H"
PT "I"
PT "G"
8.883 (REF)(TYP)
6.466 (REF)(TYP)
3.437 (REF)(TYP)
4.896 (REF)(TYP)
8.429 (REF)(TYP)
11.314 (REF)(TYP)
Z 0.00
-11 (REF)
LDW280-10844-1 SKIN (CHEM-MILL)
-3 SKIN (WELDED)
℄ OF WELD ON -1
-Y0.00
℄ OF SYM (EXCEPT AS NOTED)
1/4 (REF)
3.482 (REF)(TYP)
(SEE NOTE 1) 1.06±.06
1.06±.06 (SEE NOTE 1)
.01 (SEE NOTE 2&3)
X 308.50 (REF)
X 296.453 (REF)
LINE "Z"
LINE "AA"
LINE "AB"
LINE "P"
LINE "A"
LINE "B"
LINE "C"
LINE "D"
LINE "E"
LINE "F"
LINE "G"
LINE "H"
LINE "I"
LINE "J"
-13
ROLL DN
5
.030 (REF)
.016 (REF)
.020 (REF)
.025 (REF)
CHEM-MILL LINE
SEE NOTE 7
4
1
2
3
8
7
6
5
4

VIEW LOOKING DN
SCALE: NONE
(REF DIM TO I.D.)

VIEW A-A (UNWRAPPED)
LDW280-10844-1 (REF)

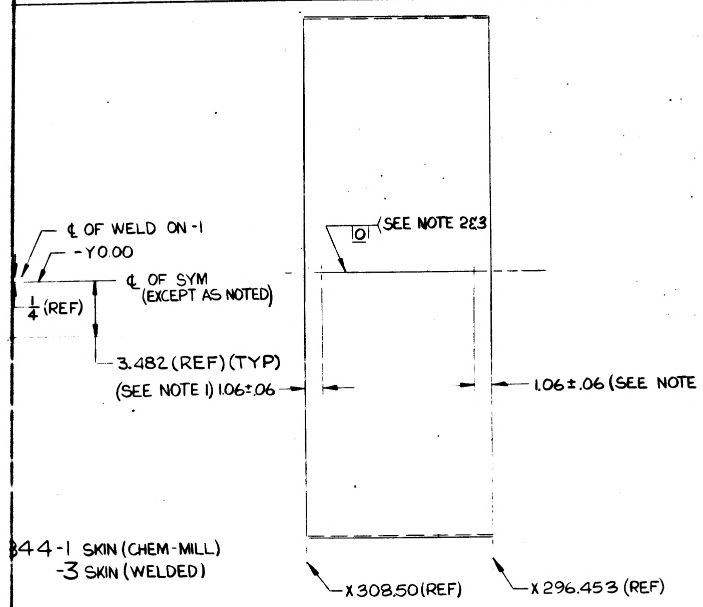
02/03

E IDENT NO. 26512
DW280-10844 SH 3

NAS 9-1100

CODE IDENT NO 26512
LDW280-10844 SH 3

5 4 3 2


℄ OF WELD ON -1
-Y0.00
℄ OF SYM (EXCEPT AS NOTED)
1/4 (REF)
3.482 (REF) (TYP)
(SEE NOTE 1) 1.06±.06
0
(SEE NOTE 2&3
1.06±.06 (SEE NOTE 1)
844-1 SKIN (CHEM-MILL)
-3 SKIN (WELDED)
X308.50 (REF)
X296.453 (REF)

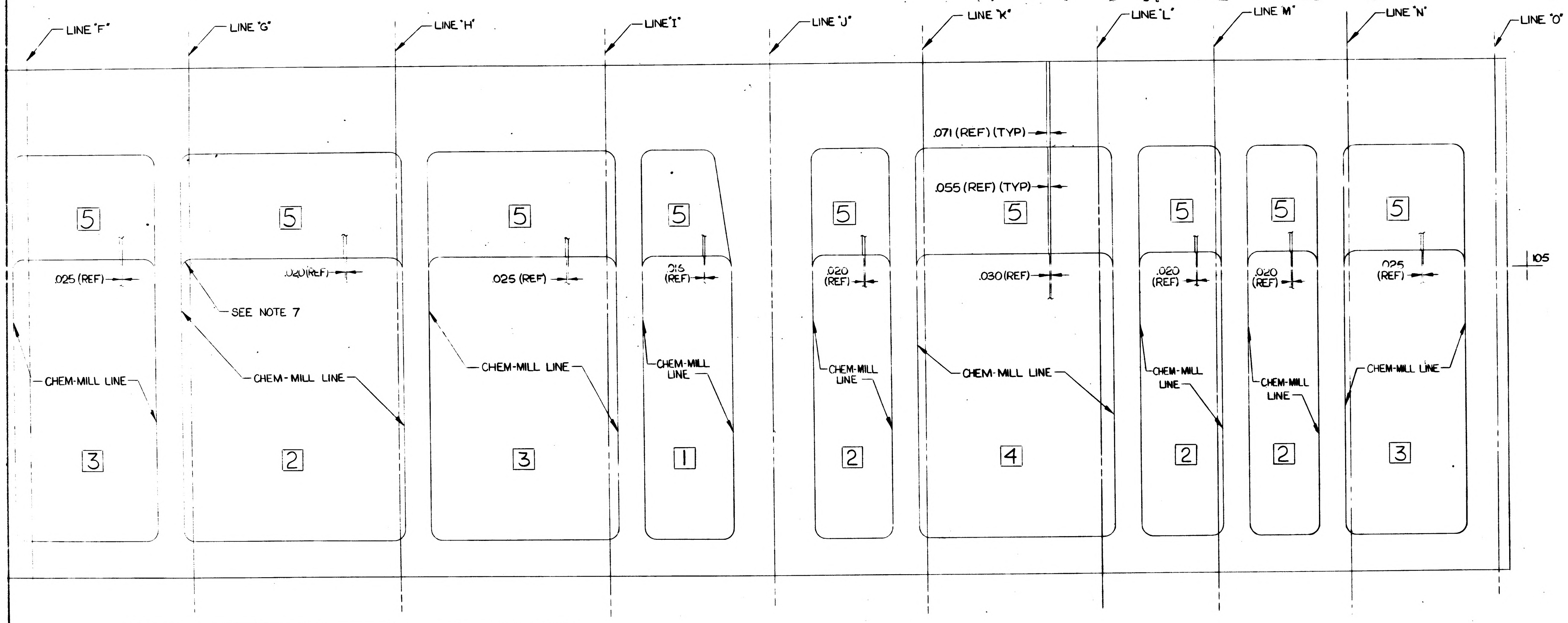
NOTES:
1. GRIND WELD FLUSH (+.010-.000) 125 1.06 ± 1/16 FROM TOP & BOTTOM OF TRIMMED TUNNEL SKIN NS & FS
2. THIS EDGE OF -13 SKIN IS TO BE PREPARED FOR SQUARE BUTTWELD. DO NOT BREAK SHARP EDGES.
3. MECHANIZED FUSION WELD PER GRUMMAN SPEC LSP-14-6201 AND INSPECT PER STANDARD II. DO NOT REHEAT TREAT AFTER WELDING
4. -13 SKIN IS TO BE ROLLED & WELDED BEFORE CHEM-MILLING
5. STOCK SIZE FOR -13 TO BE .067-.071 X 15 1/4 X 107
6. WEIGHT OF -1 CHEM-MILL SKIN AS SHOWN (BUT NOT INCLUDING RIVET HOLES OR EXCESS MATERIAL FOR TOOLING) SHALL NOT EXCEED 6.26 POUNDS.
7. TOLERANCE ±.125 AT TANGENCY POINTS OF CHEM-MILL LINE CORNER RADII BETWEEN TWO ETCHED SURFACES
8. ~~UPON INITIAL RELEASE OF THIS DWG TOOLING FOR LDW280-10844-11 IS SIMILAR TO LDW280-10454-11~~
9. AFTER CHEM-MILLING, MASK WELD AREA 3/4 - 7/8 EITHER SIDE OF WELD BEFORE ANODIZING (BOTH SIDES)
10. BRUSH ALODINE WELD AREA

100
25

LDW280-10844-1

CHEM-MILL LINE TOLERANCE
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING		*DEPTH OF CUT
1	.016	+.002 -.002	.055 (REF)
2	.020	+.002 -.002	.051 (REF)
3	.025	+.003 -.002	.046 (REF)
4	.030	+.003 -.003	.041 (REF)
5	.055	+.004 -.003	.016 (REF)


LINE "F"
LINE "G"
LINE "H"
LINE "I"
LINE "J"
LINE "K"
LINE "L"
LINE "M"
LINE "N"
LINE "O"
.071 (REF) (TYP)
.055 (REF) (TYP)
5
5
5
5
5
5
5
5
5
.025 (REF)
.020 (REF)
SEE NOTE 7
.025 (REF)
.016 (REF)
.020 (REF)
.030 (REF)
.020 (REF)
.020 (REF)
.025 (REF)
105
CHEM-MILL LINE
CHEM-MILL LINE
CHEM-MILL LINE
CHEM-MILL LINE
CHEM-MILL LINE
CHEM-MILL LINE
CHEM-MILL LINE
CHEM-MILL LINE
CHEM-MILL LINE
3
2
3
1
2
4
2
2
3

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 28 X 118

PRINTING INFO ONLY
FULL SIZE SHEET AREA (30 X 120)- 25 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL)- 6.25 SQ. FT.

PRINT TRIM LINE

LDW280-10844A

LDW280-10844A

03703

CODE IDENT NO 26512
LDW280-10844 SH 3

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
H	26512	LDW280-10844	A

MODEL OR END ITEM
SCALE FULL
SHEET 3.00

5 4 3 2

FOR PHOTO REPRODUCTION K2

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM	LDW280-54022	LEM-6 (36)	1
								LEM	LDW280-54022	LEM-5 (35)	1
								LEM	LDW280-54022	LEM-4 (34)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW 280-10844-1		GAEC SCH NO. 32-7	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED A

LAST DASH NO. USED -1

GRUMMAN REL INFO A/B

PRIM NO. 215 | LE(001) | MP12 / A | 5-19 A

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM I

DOCUMENTATION TYPE II

DRAWN BY F. HIPPLER 3-8-66

LAYOUT BY E. COLEMAN

CHECKED BY EG 3-14-66

GR. LEADER 3/24/66

VEH. DES. INT. 3/24

STRUCTURES

STRUCTURES Hilderman 3/25

WEIGHTS 3-30

RELIABILITY

PROJ ENGR 3-30-66

REL GROUP 3-31-66

Ⓡ GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SKIN
ASCENT STAGE - MID SECTION - DOCKING TUNNEL

SIZE B

CODE IDENT NO. 26512

LDW280-10844 B

SCALE NONE

SHEET 1.00 OF 4

ENG 77.1 9-64

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	~~SH CHG LTR~~	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10, 2.00 & 3.00								REMOVED -11 ADDED -13, SH 1.00 OF 4 WAS SH 1.00 OF 3 ADDED SH 1.10.	LEM-4,-5&-6		-11	HIPPLER 4-9-66		
B	1	1.00, 1.10							EOB1	FOR-1 CHANGED N/A TO LDW280-54022, IT WAS LDW280-54027	NOT REQD	NOT	REQD	J ESAITIS 7-19-66		

FOR CONTINUATION OF REVISIONS SEE SHEET

ENG 77.3 5-64

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10844	B
SCALE NONE			SHEET 1.10

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO	LDW280-10844	EO NO.	C1
CONTROL INFO NO.	LM-3-4144		

FOR-1 ADD LM-7(37) THRU LM-15 (45)
N/A LDW280-54022

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: UPDATE DRAWING TO AGREE WITH N/A LDW280-54022

DESCRIPTION OF EO: FOR-1 ADD LM-7(37) THRU LM-15(45) ⓟ

GAECC EO RELEASE: FR:

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-7(37)	THRU
		LM-15(45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓ REVISE DWG	RECORD EO	✓ REWORK	SCRAP

APPROVED BY				—	—			
DATE	10/26/66			—	—	10-18-66	10-18-66	10-18-66
10-18-66	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SKIN A.S. - M.S. - DOCKING TUNNEL	LDW280-10844	C1

ISSUED BY LIAISON / VIC BOLLO x2151 SECTION VDI GROUP NO. 335 PL 35 EMF

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280		EO NO. 931
CONTROL INFO NO. LDW280B2702		

(1) ADD "TEST 75" EFF. & N/A LSK 280-11193 TO THE FOLLOWING PARTS:

PART Nº *	CHANGE LTR	QTY	TITLE
LDW 280-10227-11,-12 -27 & -28	E2	1 EA	SEE DWG
-10545-11,-17-19	B2	1 EA	
-10488-11	F1	1	
-10497-11	B2	1	
-10498-15	D4	1	
-10450-13-16	C3	1 EA	
-10480-11,-12,-13-14	B2		
-10481 - 15,-16,-19,-20	C2		
-10510-12,-21,-22,-23-24	C2	1 EA	
-10443-11,-13-15	C1	1 EA	
-23124-1,-2	A2	1 EA	
-53050-3	B6	1	
-10486-11,-13,-23	C2	1 EA	
10444-15	C2	1	
-10445-15	C2	1	
-10519-11	B2	1	
-54017-1	B1	1	
-10838-11,-12	B2	1 EA	
-11182-11	A2	3	
-11182-13		1	
LDW 280-23028-1	E6	1	
LDW 280 M-10840-1	B3	1	
LDW 280M 10479-1	A2	4	
LDW 280M-10534-1	B3	1	
-10177-1,-2	E1	1 EA	
10177-3		4	
10264-1	C1	1	
10484-1	C1	1	
-10844-1	A5	1	
-10501-1	C1	1	
-10432-1,-2	B2	1 EA	
-10433-1	B2	1	
-10447-1	C3	1	
-2		2 EA	
LDW280M-10700-1	B4	1	SEE DWG

(2) ADD "TEST 75" EFF & N/A LDW280-54017 TO

LDW 280-54022-1	B6	1	SEE DWG
LDW 280M-10383-7	D8	1	SEE DWG

(3) ADD "TEST 75" EFF. TO THE FOLLOWING PARTS

PART Nº	CHANGE LTR	NEXT ASSY	QTY	TITLE
LDW280-10362-11	B3	LDW 280-53050	2	SEE DWG
LDW280-10362-13			1	
LDW280-10362-11,-13		LSK-280-11193	1 EA	
LDW280M10406-1	CT	LDW280-53050	1	
LDW280M10406-2		LSK280-11193	1	
LDW280M10407-5	C2	LSK280-11193	1	
LDW280M10407-7		LDW280-53050	1	
LDW280-10361-12, -17,-18	B3	LSK280-11193	1 EA	
LDW280-10361-11,-13,-15,-16,-17,-18		LDW 280-53050	1 EA	
LDW280-10361-19			2	
LDW280-10360-14	B3	LSK280-11193	1	
LDW280-10360-11, -12		LDW 280-53050	1 EA	SEE DWG

(4) ADD "TEST 75" EFF. & N/A LDW 280-53050 TO THE FOLLOWING PARTS

PART Nº	CHANGE LTR	QTY	TITLE
LDW280M-10404-1	C4		SEE DWG
LDW280M-10403-1	C3	1	SEE DWG

(5) ADD "TEST 75" EFF & N/A LDW 280-23028 TO THE FOLLOWING PARTS

PART Nº *	CHANGE LTR	QTY	TITLE
LDW280-10354-13,-15,-17	B2	1 EA	SEE DWG
LDW280-10355-11,-13,-14,-15	B3	1 EA	
LDW280M10559-11 & -12	A2	1 EA	
LDW280-10482-11,-13,-15,-17	A2	1 EA	
LDW 280M10381-1	C4		
LDW 280M 10382-1	C3		
LDW 280-10554-11	B2		SEE DWG

(6) ADD "TEST 75" EFF, N/A LDW 280-23124, TO

LDW280M10414-1 & -2	B3	1 EA	SEE DWG

(7) ADD "TEST 75" EFF N/A LDW 280-54022 TO THE FOLLOWING PARTS

PART Nº *	CHANGE LTR	QTY	TITLE
LDW280-10844-1	C2	1	SEE DWG
LDW280M 10397-3	E1		SEE DWG

*

DETAIL SPEC REQ		CL II ENGRG CHG		CL I NGRG CHG	✓	LCD 2800

⑤

REASON FOR EO: PARTS REQUIRED FOR DOCKING TUNNEL TEST ASSY.

DESCRIPTION OF EO: FOR DASH Nº * ADDED TEST 75 ASSY REQ'TS

GAEC EO RELEASE: H.F 4/30/68

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		TEST (75)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓		NOT REQ'D	
REVISE DWG	RECORD EO	REWORK	SCRAP

APPROVED BY							
DATE	3/28/68			3-28-6	3-28		3/29/68, 4-30-68
--	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DWG	LEO 280	931

3/29/68
ISSUED BY R. SMALL 3/26/68 x7033 SECTION VDI GROUP NO. 335 PL 25

01
NAS 9-1100

LDW280-10845 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
L M	LDW280-23286	L M-15(45)	1
		L M-14(44)	
		L M-13(43)	
		L M-12(42)	
		L M-11(41)	
		L M-10(40)	
		L M-9(39)	
		L M-8(38)	
		L M-7(37)	1
		DESTRUCT TEST	2
		L M-6(36)	
		L M-5(35)	
		L M-4(34)	
		L M-3(33)	
L M	LDW280-23286	LTA-3(13)	2

PART NO. LDW280-10845-11

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	—	GRUMMAN REL INFO	
LAST DASH NO. USED	-11	PRIM NO. 215	LE(001) MP12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.010 ±0°30'
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY		RELIABILITY	
LAYOUT BY	T. MASSEY 2/23/66	CREW PROV	
CHECKED BY			
GROUP LDR	RV PHILLIPS 3/3/66		
VDI	W. BISCHOFF 3/20		
STRUCT	FEB 3/22	PROJ ENGR	J. ALBER/RC 3/28/66
STRUCT	HILDERMAN 3/22	REL GROUP	A. CARAMANICA 3/29
WEIGHTS	D. ROBESCH DJL 3/25		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SLEEVE
ASCENT MID SECT CREW REST STA ATTACH

SIZE	CODE IDENT NO.		
B	26512	LDW280-10845	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

DWG SUPERSEDES LDW280-10845 NO CHG 3/29/66

01 NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHG LAST REV NO CHG SH 1.00 OF 4 WAS SH 1 OF 1	Collett	8/31/66				
A	1							EO A1	SUPERSEDED BY EO A2	NOT REQD	NOT	REQD	Collett 9/1/66		
	2	1.00, 1.10 3.00						EO A2	SUPERSEDES EO A1, IN FIELD FOR -11 DELETED .375 RAD ADDED 7/16 RAD. QTY REQD PER MODULE WAS "1"	LTA-3(13) LEM-3 THRU LEM-6 DESTRUCT TEST	✓				
	3	1.00, 1.10						LEO 280-219	FOR -11 ADDED L M-7(37) THRU -15(45) TO EFF BLOCK	LEM-7(37 THRU -15(45)	NOT	REQD	JK		

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY	CREW PROV	PROJECT	RELEASE		
	A			BW 9-26								

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10845	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10845-11	E	SLEEVE	STAINLESS STEEL	MIL-T-8606	321 ANNEALED	.137O.D ×.028×2½	NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10845	A

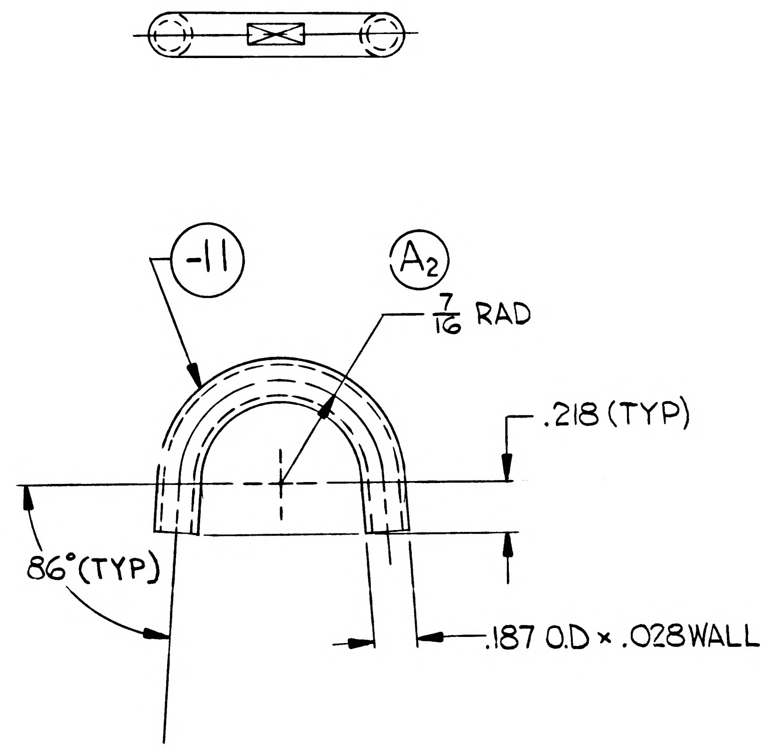
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	

FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	✓
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
HEAT FORMING PERMISSIBLE	✓

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10845	A
SCALE 2/1		SHEET 3.00	

ENG 73.11 12-64

01 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10845
EO NO. B1
CONTROL INFO NO. LDW280B5172

IN N/A BLOCK

3 REQ/MOD FOR LM-6 (36) WAS 2REQ
2 REQ/MOD FOR LM-7(37) THRU LM-15(45) WAS 1REQ

SWIP

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	✓	LCD 3298 PKG 1 CCA 1340 (5)

REASON FOR EO: ADDITIONAL REQMTS FOR USE ON NEW RESTRAINT ASSY REQ'D FOR PLSS STOWAGE STRAP

DESCRIPTION OF EO: INCREASED NO. REQ PER N/A BY ONE(1)

GAEC EO RELEASE: JK 4/20/8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-6(36) THRU LM-15(45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS										
✓		NOT REQ		APPROVED BY				FDR	CW		JaP	
				DATE	8/19/68			8/19/68	8/23/8		8/23/68	4-20-68
REVISE DWG	RECORD EO	REWORK	SCRAP		VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: C
DRAWING TITLE: SLEEVE - A/S M/S CREW REST STA ATTACH
DRAWING NO.: LDW280-10845
EO NO.: B1

082668
ISSUED BY T. DALY X7033
SECTION VDI
GROUP NO. 335
PL 25

01
NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 1321
CONTROL INFO NO. LDW280B6838

TO *DASH NOS OF DRAWINGS LISTED RESTRICT TO LTA 3(13) LM3(33) THRU LM14(44)
WAS LTA 3(13), LM3(33) THRU LM15 (45)

DWG #	TITLE	* DASH #	QUANTITY	N/A	** COMAT CLASSIFY	EO#
LDW280-10564	SKIN A/S-M/S ENGINE COVER-INNER	-11	1	LDW280-23169		C3
LDW280M10081	RING A/S-M/S ENGINE COVER-UPPER	-1	1	LDW280-23169		B6
LDW280M10082	RING A/S-M/S ENGINE COVER-LOWER	-1	1	LDW280-23169		C4
LDW280-23169	SKIN ASSY A/S-M/S ENGINE COVER	-1	1	LDW280H53140		C2
LDW280M10823	RETAINER A/S-M/S ENGINE COVER	-1	2	LDW280-23285		A3
LDW280-23286	CABLE ASSY A/S-M/S CREW REST STA ATTACH	-1	2	LDW280-23261	NM	B2
LDW280-10845	SLEEVE A/S-M/S CREW REST STA ATTACH	-11	2	LDW280-23286		B2

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 3587 PKG #11

REASON FOR EO: ELIMINATION OF EQUIP. FROM LM15 A/S

DESCRIPTION OF EO: IN MOD BLK FOR * RESTRICTED TO LTA3(13) LM3(33) - LM14 (44) WAS LTA 3(13) LM3(33) - LM15(45)

GAEC REL 3-24

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CON'R UNIT NO.
LM		LM15 (A/S)	

EFFECTIVITY: COMAT (SEE ABOVE **)

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK SCRAP ✓

APPROVED BY								
DATE	3/1/69	3-3-69		3/6/69	3/11/69		3/20/69	3-31-69
	VDI	~~SUPPORT~~ WHT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C
DRAWING TITLE: SEE ABOVE
DRAWING NO.: LEO 280
EO NO.: 1321

4-1-69 ISSUED BY P. WEISSLITZ x86048 SECTION VDI GROUP NO. 335 PL 25

01 NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23026	LEM-6(36)	4 EA
LEM	LDW280-23026	LEM-5(35)	4 EA
LEM	LDW280-23026	LEM-4(34)	4 EA
LEM	LDW280-23026	LEM-3(33)	4 EA
LEM	LDW280-23026	LTA-3(13)	4 EA
PART NO. LDW280-10846-23-15 & -16		GAEC SCH NO. 32-5	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23026	LEM-6(36)	2EA
LEM	LDW280-23026	LEM-5(35)	2EA
LEM	LDW280-23026	LEM-4(34)	2EA
LEM	LDW280-23026	LEM-3(33)	2EA
LEM	LDW280-23026	LTA-3(13)	2EA
PART NO. LDW280-10846-13, 19 & -21		GAEC SCH NO. 32-5	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -23

GRUMMAN REL&INFO B

PRIM NO. LE001

215 MP12A

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY SUPPA 1-1-66
LAYOUT BY FISH
CHECKED BY 3-9-66
GR LEADER 3/17/66
VEH DESINT 3-18
STRUCTURES
STRUCTURES 3-21
WEIGHTS

PROJ ENGR 3-22-66
REL GROUP 3-23

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHANNEL
ASCENT STAGE-MID-SECT-REACTION
CONT SYS TANK SUPPORT

SIZE B | CODE IDENT NO. 26512 | LDW280-10846 | B

SCALE NONE

SHEET 1.00 OF 4

ENG 77.1 9-64

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00, 1.10, 2.00 & 3.00							ADDED SH 1.10, SH 1 OF 4 WAS 1 OF 3. ADDED -21 & REMOVED -17, FOR -15, -16 4 EA WAS 2 EA/MODULE	NOTED		-17	DAGOSTO 5-4-66		
B	1	1.00 1.10 2.00 & 300						E.O.B1	REMOVED -11, ADDED -23	LTA-3, LEM-3 THRU LEM-6		-11	FOSTER 9-9-66 WW		

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-66

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10846	B
SCALE NONE			SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10846-21	E	PLATE	AL ALLOY SH	QQ-A-250/12	7075-T6	.050x1 7/8x8 7/8	NONE	88	
								-19		PLATE			7075-T6	.050x1 3/8x2 7/8	NONE		
								-16		CLIP			7075	.032x2x2 3/8	T6		
								-15		CLIP				.032x2x2 3/8			
								-13		ANGLE				.050x3 1/4x14 1/8			
								LDW280-10846-23	E	CHANNEL	AL ALLOY SH	QQ-A-250/12	7075	.056x5 3/8x15 1/8	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10846	B

SCALE NONE

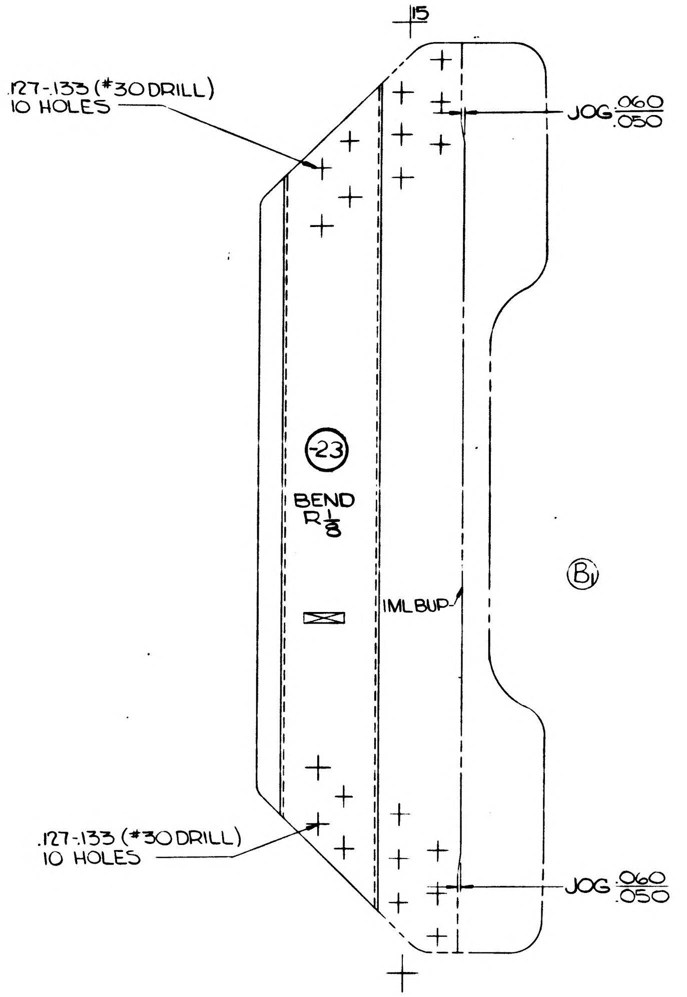
SHEET 2.00

ENG 77.2 7-65

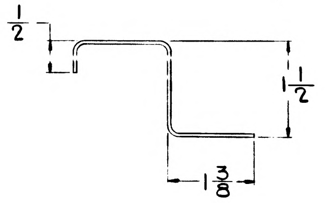
01

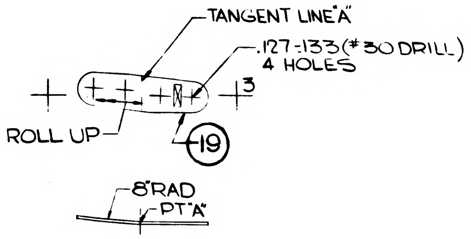
NAS 9-1100

NOTE
1-NO TOOLING HOLES PERMITTED IN PARTS.

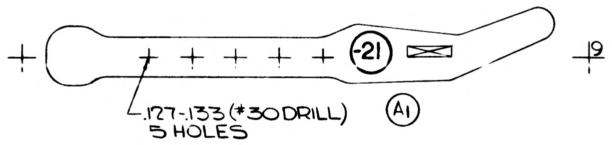


15
.127-.133 (#30 DRILL)
10 HOLES
JOG .060/.050
-23
BEND R 1/8
IML BUP
B1
.127-.133 (#30 DRILL)
10 HOLES
JOG .060/.050

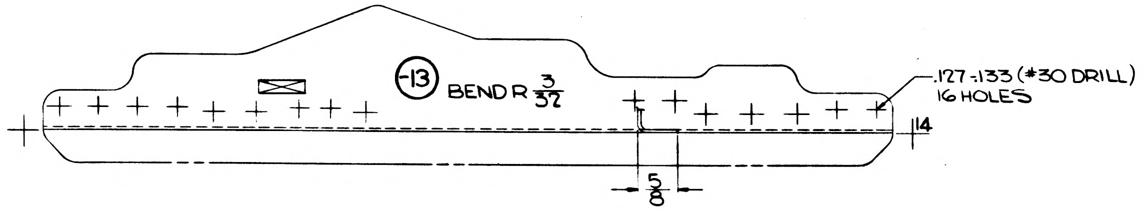




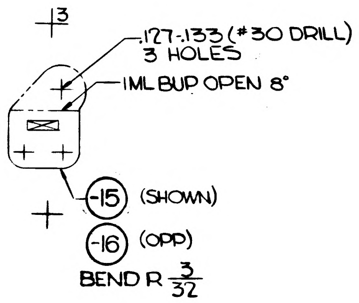
TANGENT LINE "A"
.127-.133 (#30 DRILL)
4 HOLES
3
ROLL UP
-19
8° RAD
PT "A"



-21
.19
.127-.133 (#30 DRILL)
5 HOLES
A1



-13
BEND R 3/32
.127-.133 (#30 DRILL)
16 HOLES
.14
5/8



.13
.127-.133 (#30 DRILL)
3 HOLES
IML BUP OPEN 8°
-15 (SHOWN)
-16 (OPP)
BEND R 3/32

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD 10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

01 NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
LEM	SIZE E	CODE IDENT NO. 26512	LDW280-10846	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

LDW280-10846 B

23 * GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

GMO 32.2 REV 3-63

DWG. NO LE0280 | EO NO. 295
CONTROL INFO NO. LDW28CA0657

*TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4 3/4;

DRAWING NUMBER	CHANGE NUMBER	TITLE
✓ LDW280-10789	A3	SEE DRAWING
✓ -10790	B1	
✓ H 10792	C1	
✓ -10796	A1	
✓ -10798	B1	
✓ -10800	B2	
✓ H 10801	A1	
✓ H 10802	B1	
✓ H 10804	B1	
✓ -10806	C1	
✓ -10808	A1	
✓ P 10809	B2	
✓ -10811	B2	
✓ -10813	B1	
✓ -10814	B1	
✓ -10815	A4	
✓ -10817	A1	
✓ -10838	B1	
✓ -10846	C1	
-10927	B1	
-10934	A1	
-10953	B1	
-10954	A1	
-10955	A1	
-10961	A3	
P 10966	A4	
-10970	A1	
-10973	A1	
-10974	A1	
-10976	A1	
-10977	A1	
-10979	A1	
LDW280-10980	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE: C | LE 10/8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38) LEM-9(39)	
LEM		LEM-10(40) LEM-11(41) LEM-12(42)	
LEM		LEM-13(43) LEM-14(44) LEM-15(45)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

APPROVED BY				—	AW			PMC	AC
DATE	9/13/66			—	9.29			10-6-66	10-3-66
	VD!	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRES GROUP	LIAISON ENG RG		PROJ ENGRG	GOVT

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO. LE0280

EO NO. 295

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 35

ENG 32.2 REV 3-66

*

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER EMF-4

DWG. NO. LEO-280
EO NO. 442
CONTROL INFO NO. LM-2-3201

FOR THE LISTED DASH NUMBERS OF THE FOLLOWING DRAWINGS EFFECTIVE LM4(34) THRU LM-15(45) NEXT ASSEMBLY LDW280-23026 SHOULD BE LDW280-54026

DRAWING NUMBER	DASH NUMBER	CHANGE NUMBER	TITLE
✓ LDW280-10370	-19	D2	SEE DRAWING
✓ 10407	-17;-19	D1	
✓ 10426	-11	C1	
✓ 10522	-11;-15 &.-16	B2	
✓ 10546	-15;-19;-21 &.-23	B6	
✓ 10547	-11;-13 &.-17	B3	
✓ 10548	-12	C2	
✓ 10549	-17;-18 &.-19	D2	
✓ 10555	-11;-13 &.-15	B2	
✓ 10556	-15	C2	
✓ 10577	-11	B2	
✓ 10582	-11 &.-13	B3	
✓ 10751	-21;-23 &.-27	C6	
✓ 10846	-13;-15;-16;-19;-21 &.-23	C2	
11095	-17	B1	
11103	-15	A2	
11531	-11	B2	
LDW280-11532	-11 &.-15	A4	
LDW280H-10536	-1 &.-3	C2	
LDW280M-10056	-3	D2	
-10553	-1	B3	
-10568	-1	C2	
-10581	-1 &.-2	B2	
-10593	-1	A2	
-10657	-2	B2	
-10688	-1	B2	
LDW280M-10979	-1	A2	SEE DRAWING

*USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF EO.

2

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: TO AGREE WITH: LDW280-54026 NEXT ASSY. REQ.S

DESCRIPTION OF EO: FOR DASH * NEXT ASSY. LDW280-54026 WAS LDW280-23026

GAEC C EO RELEASE: ① LE

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-4 (34)	
		THRU	
		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
					Caw	cau	pme	
DATE	-6-				1/11/67	1/11/67	1-16-67	1-12-67

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LEO-280
EO NO.: 442

ISSUED BY LIAISON T.J. MARTIN 1-10-67 X3604 SECTION V.D.I. GROUP NO. 335 PL 35

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 834
CONTROL INFO NO. LDW 280B-0903

FOR THE FOLLOWING DWGS: FOR DASH No. NOTED *
ADD EFF: LFM-50 & PA 1(47) & NEXT ASSY.

LFM

(* USE APPLICABLE DASH NO. IN DESCRIPTION OF E.O.)

DWG. No.	DASH No.	No. REQD.	CHG. NO.	NEXT ASSY.
LDW280-10370	-19	2	D5	LDW280-54026
✓ -10407	-17-19	2 EA.	D3	
✓ -10426	-11	4	C2	
✓ -10522	-11	2	B5	
	-15,-16	4 EA.		
✓ -10546	-21-23-15,-19	2 EA.	C1	
✓ -10547	-11-15	10	B4	
	-13-17	2 EA.		
✓ -10548	-13	4	C3	
✓ -10549	-11,-17-18	2 EA.	D3	
	-19	8		
✓ -10555	-11-17	4	B4	
	-13-15	2 EA.		
✓ -10556	-15	4	C3	
✓ -10577	-11-13	2 EA	B3	
✓ -10582	-11-13	2 EA.	B4	
✓ -10751	-21-23-27	2 EA.	D2	
✓ -10755	-13-23-19-21-25	2 EA.	C1	
✓ -10846	-19,-21,-13	1 EA	C3	LDW280-54026
	-23,-15,-16	2 EA		
	-17	2	B4	LDW280-54026
-11095	-11,-13,-15	2 EA		LDW280-23341
-11103	-15	2	A3	LDW280-54026
-11531	-11	2	B3	LDW 280-54026
-11532	-11-15	2 EA.	A5	LDW 280-54026
-11096	-15-11-13	2	B2	LDW 230-23340
-11103	-11-13	2 EA.	A3	LDW 230-23340
-11015	-1-13	4 EA.	B4	LDW 280-23278
	-15-17	8 EA.		
-10978	-1-2	1 EA.	B3	LDW280-23278
-11073	-13-15	2 EA.	A3	LDW230H10536
LDW280-10711	-11-13-15-17	2 EA.	B2	LDW280H10536
LDW280H10752	-11-13	2 EA.	A2	LDW 280H10536
LDW280-14235	-11	8	A4	LTM280-26963
	-15-19	2 EA.		LTM280-26969
	-17	1		
-14255	-11-12	1 EA.	B1	LTM280-26963
-10790	-11-12 -15-17-18	1 EA.	B6	
	-19-21-22	1 EA.		
-10789	-25,-26,-27-28-29	1 EA.	A6	
	-31-32	1 EA.		
-11907	-11-13-15-17-21-23	1 EA.	B2	
LDW280-11882	-13-15-17-19-21	1 EA.	B1	LTM280-26963
LDW280H10536	-1-3	2 EA.	C4	LDW280-54026
LDW280-23328	-1	2	B5	LDW280-54026
LDW280-23278	-1-2	1 EA	C6	LDW280-23328
LDW280-23341	-1	2	A4	LDW280-23328
LDW280-23340	-1	2	A2	LDW280-23328

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	✓	LCD #2019 CCA 667

REASON FOR EO: UPDATE PA-1(47) TO LM-3 (33) CONFIG.

DESCRIPTION OF EO: FOR * ADDED PA-1(47) EFF.

GAEC EO RELEASE: JK 1/1/..

MODEL	EFFECTIVITY: ~~PROCURING ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM #50	PA-1(47)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG ✓	RECORD EO	REWORK NOT	SCRAP REQ

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY					bw			Bottle
DATE	1/1/68			1-8-68	1-9		1/10/68	1-4-68

PRIORITY: C

DRAWING TITLE: NOTED ABOVE

DRAWING NO. LEO 280

EO NO. 834

1-9
ISSUED BY W. FAULK SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01
NAS 9-1100

LDW280-10847 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW28C 28222	QUAL TEST(70)	1 EA
		LM-2(32)	1 EA
		LM-1(31)	1 EA
	LDW280-28222	LTA-8(18)	1 EA
	LDW280-53222	PA-1(47)	1 EA
		QUAL TEST(70)	1 EA
		LM-15(45)	1 EA
		LM-14(44)	1 EA
		LM-13(43)	1 EA
		LM-12(42)	1 EA
		LM-11(41)	1 EA
		LM-10(40)	1 EA
		LM-9(39)	1 EA
		LM-8(38)	1 EA
		LM-7(37)	1 EA
		LM-6(36)	1 EA
		LM-5(35)	1 EA
		LM-4(34)	1 EA
LM	LDW280-53222	LM-3(33)	1 EA
PART NO. LDW280-10847-21 & -25		GAEC SCH NO.	

LM	LDW280-53222	QUALTEST(70)	1
LM	LDW280-28222	LM-2(32)	1

PART NO. LDW280-10847-31

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28222	QUAL TEST(70)	1
LM	LDW280-28222	LM-1(31)	1
LM	LDW280-28222	LTA-8(18)	1
PART NO. LDW280-10847-23		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28222	QUAL TEST(70)	1 EA
LM	LDW280-28222	LEM-2(32)	1 EA
LM	LDW280-28222	LEM-1(31)	1 EA
LM	LDW280-28222	LTA-8(18)	1 EA
PART NO. LDW280-10847-27 & -29		GAEC SCH NO. 30	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	—	GRUMMAN RELINFO B		
LAST DASH NO. USED	-31	PRIM NO. 215	JK(001) MC-3R-12/17/8	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±010 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	J.KORYKORA 4/9/66		
LAYOUT BY	J.KORYKORA 4/9/66		
CHECKED BY			
GR LEADER	P.HENTON 4/12/66		
VEHDES INT	W. BISCHOFF 4/12		
STRUCTURES	AJP/FEB 4/14	PROJ ENGR	J.ALBER/W.C. 4/19
STRUCTURES	R.HILDERMAN 4/14	REL GROUP	A.CARAMANICA 4/21
WEIGHTS	W. MANDRAS 4/16		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
(R.H) ASCENT STAGE ~ MID SECTION ENGINE
COMPARTMENT SHIELD

SIZE	CODE IDENT NO.		
B	26512	LDW280-10847	B
SCALE	NONE	SHEET 1.00 OF 4	

B

ENG 77.1 12-65

SUPERSEDES LDW 280-10847 NO CHANGE 7/18/66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED NO CHANGE LAST REV NO CHANGE SH 1.00 OF 4 WAS SH 1 OF 1 LOFTED DWG WAS DIMENSIONED DWG R.A. COLLETT 7/18/66						
A	1	1.00, 2.00 & 3.00		DCRF 323-1079					IN FIELD & MODEL BLOCK REMOVE -11 THRU -19, ADDED -21 THRU -29, IN MODEL BLOCK REMOVE LEM-3(33), LEM-4(34), LEM-5(35), & LEM-6(36)	LTA-8 LEM-1 LEM-2		-11 THRU -19 7A	COLLETT 7/20/66		3-29-66
B	1	1.00 1.10					✓	LEO280-317 Ⓡ	FOR -21, -23, -25, -27 & -29 ADDED QUALIFICATION TEST REQM'TS	QUAL TEST	NOT	REQD	HERB. SCHWETER 12-9-68		
	2	1.00-3.00	2B					EO B2	IN FLD/DWG FOR -27 REMOVED FLANGE	LTA-8, LM-1, LM-2, QUAL TEST	✓				
	3	1.00 1.10					✓	LEO280-354	ADDED LM-3(33) THRU LM-15(45) & QUAL TEST (70) REQUIREMENTS FOR -21 & -25	LM-3 THRU LM-15, QUAL TEST	NOT	REQD			
	4	1.00 2.00 3.00	3C					EO B4	REMOVED -23 FROM LM-2 EFF ADDED -31 (-31 MAY BE MADE BY REWORKING -23)	LM-2	NOTED				
	5	1.00 1.10					✓	LEO280-508 LCD 1124	ADDED PA-1(47) EFF FOR -21 & -25	PA-1(W5)	NOT	REQD			
	6	1.00 1.10					✓	LEO280-739 LCD 2104 Ⓡ	FOR -25 & -31 ADDED QUAL TEST REQUIREMENTS	QUAL TEST		H.D.	E.C.G.		

CHG APPROVED					
LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS
B					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10847	B
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10847-31	E	ANGLE	AL ALY SH	QQ-A-250/12	7075	.060 × 3 1/8 × 46 3/8	T6	88	
		-29	E	DOUBLER	↑	QQ-A-250/4	2024-T3	.050 × 1 1/2 × 5	NONE	↑	
		-27	E	ANGLE		QQ-A-250/12	7075-O	.050 × 2 7/8 × 24	T6		
		-25	E	CLIP		QQ-A-250/12	7075-O	.050 × 1 3/8 × 3 3/8	T6		
		-23	E	ANGLE	↓	QQ-A-250/12	7075-O	.060 × 3 1/8 × 46 3/8	T6	↓	
		LDW280-10847-21	E	ZEE	AL ALY SH	QQ-A-250/12	7075-O	.050 × 3 9/16 × 17 7/8	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9.030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

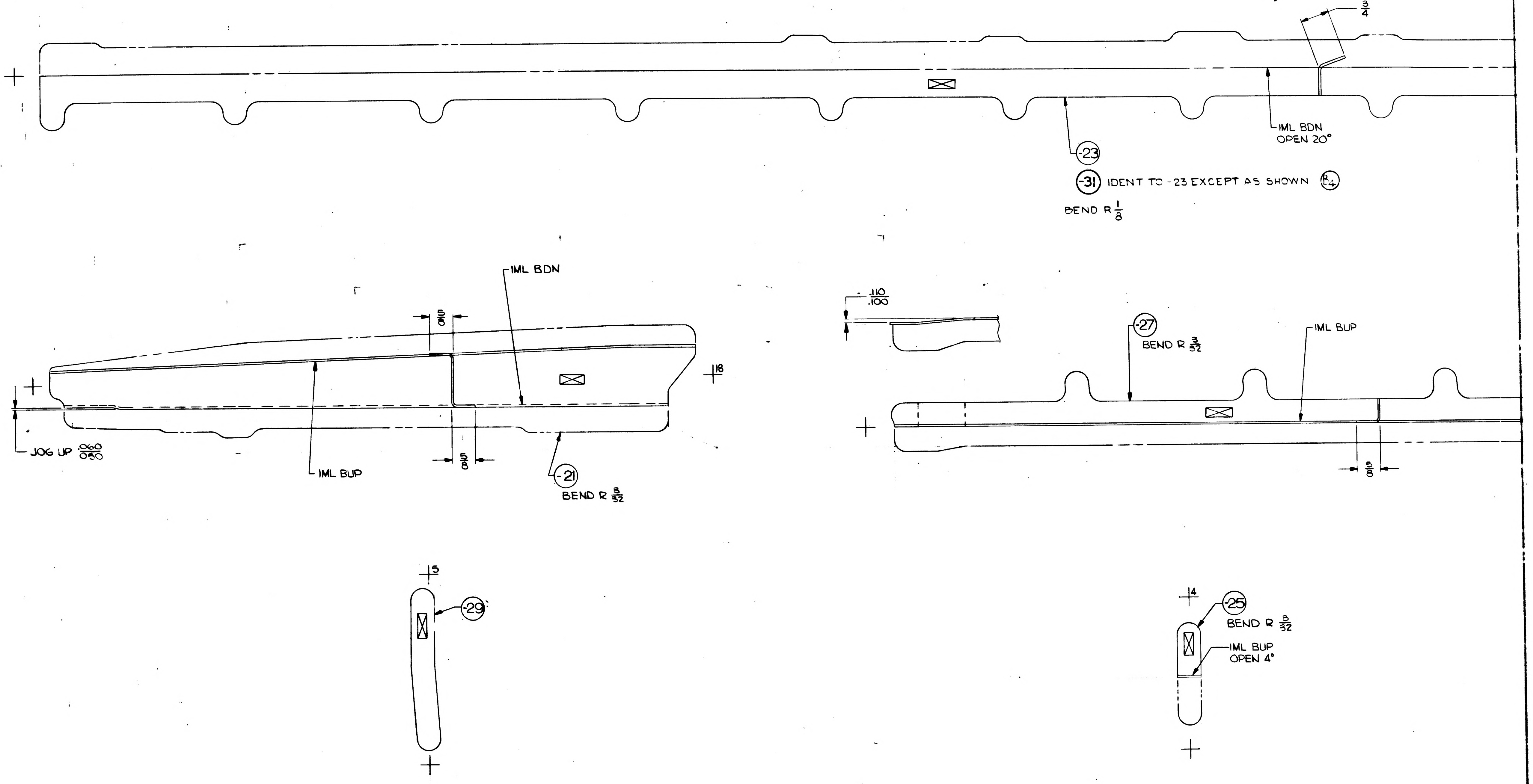
SIZE B | CODE IDENT NO. 26512 | LDW280-10847 | B

SCALE NONE | SHEET 2.00

7-65

01

NAS 9-1100

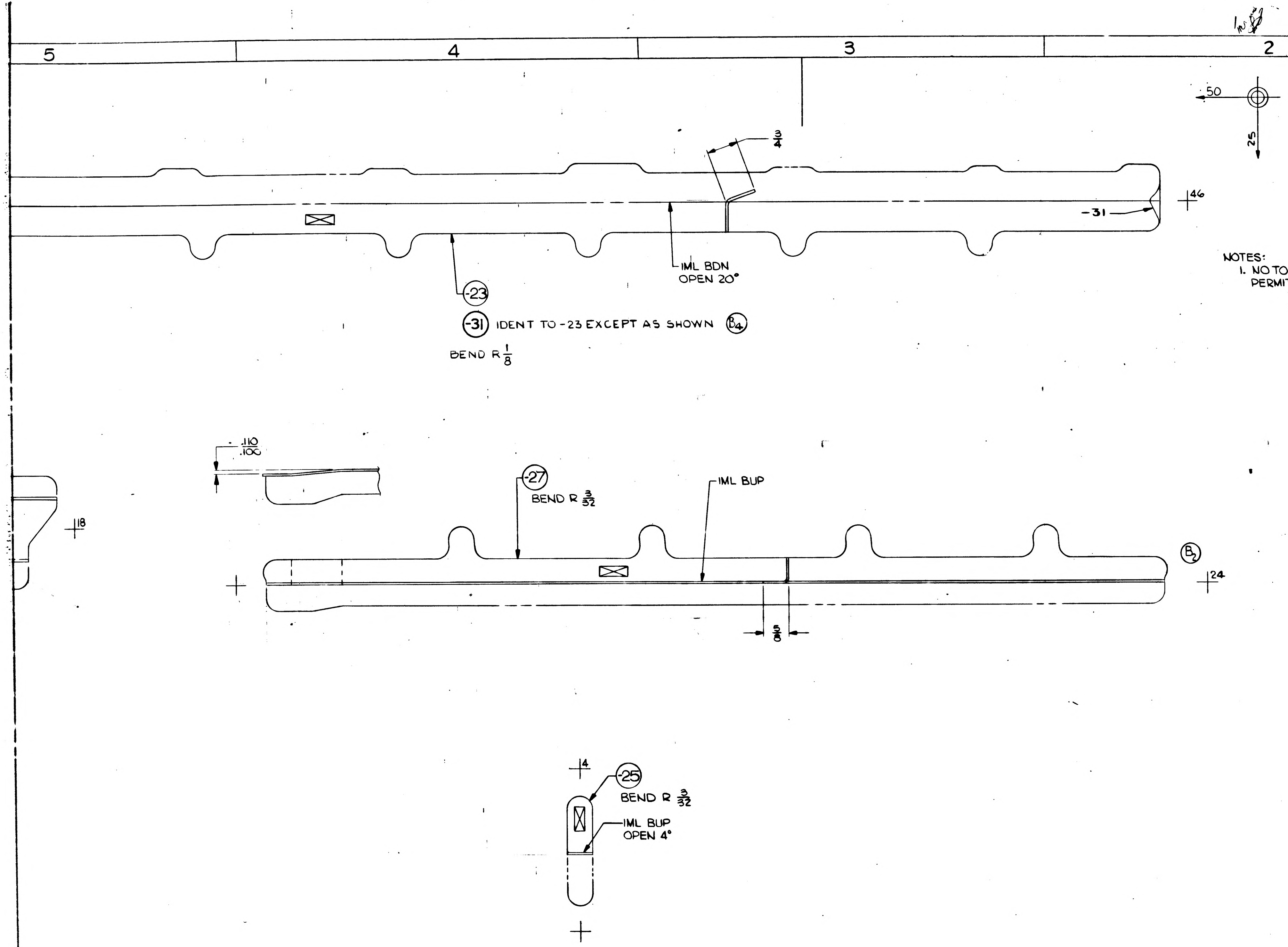

3/4
IML BDN OPEN 20°
-23
-31 IDENT TO -23 EXCEPT AS SHOWN B4
BEND R 1/8
IML BDN
5/8
18
JOG UP .060/.050
IML BUP
5/8
-21
BEND R 3/32
.110/.100
-27
BEND R 3/32
IML BUP
5/8
5
-29
4
-25
BEND R 3/32
IML BUP OPEN 4°

01/02 NAS 9-1100

CODE IDENT NO. 26512

LDW280-10847 SH 3

2/2



NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER ADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 28x 70
PRINTING INFO ONLY
FULL SIZE SHEET AREA (30x 72) = 15 SQ. FT.
½ SIZE SHEET AREA (¼ OF FULL) = 3.75 SQ. FT.
PRINT TRIM LINE

C
B
A

LDW280-10847 B

LDW280-10847 B

02/02

NAS 9-1100

B-09602

CODE IDENT NO. 26512
LDW280-10847 SH 3

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
LEM	SIZE H	CODE IDENT NO. 26512	LDW280-10847	R B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

⑤

FOR PHOTO REPRODUCTION

ENG 73-6 6-64

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10848-23-3	E	ZEE	AL ALY SH	QQ-A-250/13	ALCLAD 7075-0	.063x4 3/4x60 1/4	T6	88	
		-25	E	ZEE		QQ-A-250/13	ALCLAD 7075-0	.063x4 3/4x59 7/8	T6		
		-17	E	ANGLE		QQ-A-250/13	ALCLAD 7075-0	.025x 2 x 5 1/2	T6		
		-15	E	CLIP		QQ-A-250/13	ALCLAD 7075-0	.050x 1 3/8 x3 3/8	T6		
		-13	E	DOUBLER		QQ-A-250/5	ALCLAD 2024-T3	.050x1 3/8x5	NONE		
		LDW280-10848-11	E	CLIP	AL ALY SH	QQ-A-250/13	ALCLAD 7075-0	.050x 1 3/8x3 3/8	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

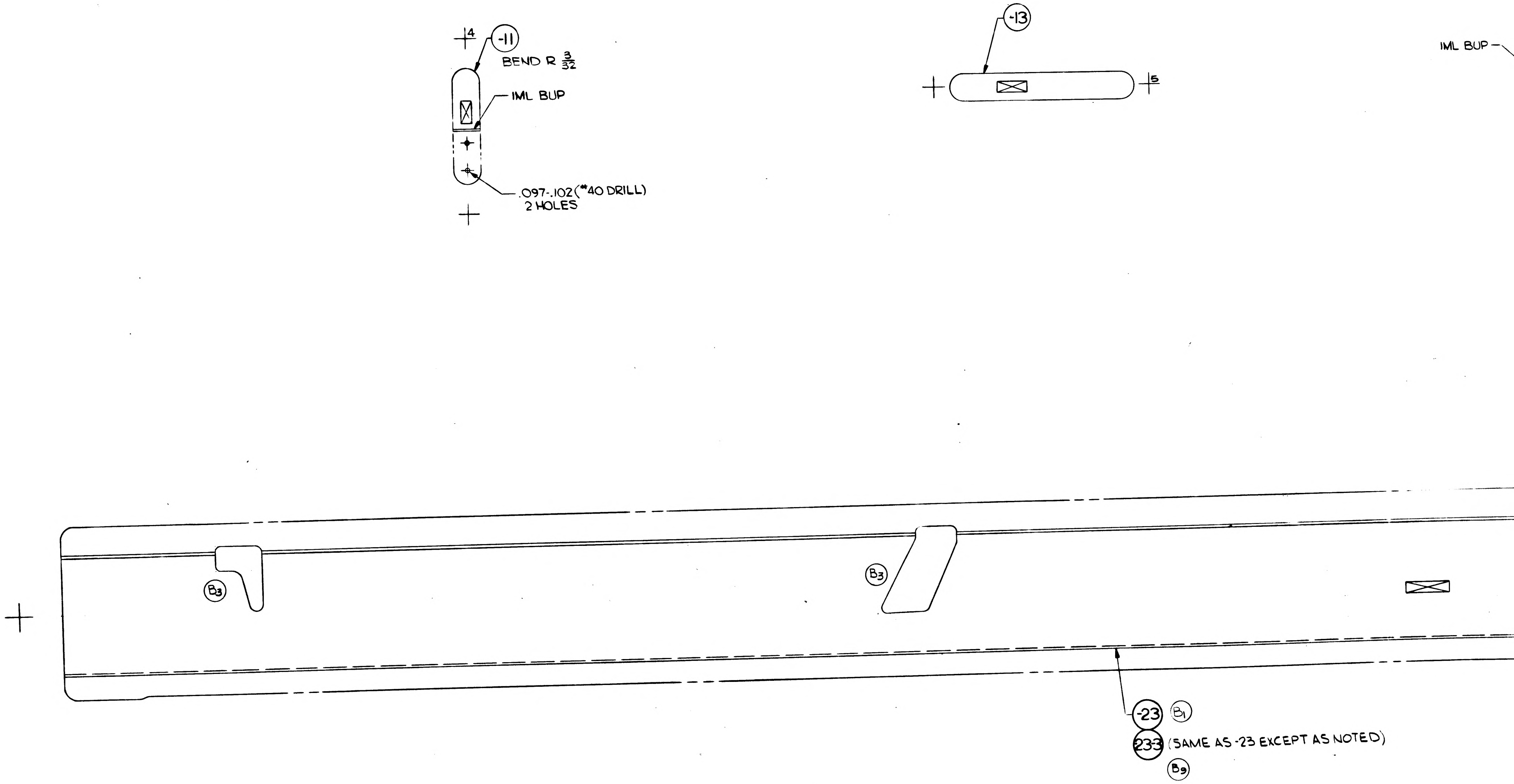
SIZE B | CODE IDENT NO. 26512 | LDW280-10848 | B (1)

SCALE NONE | SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

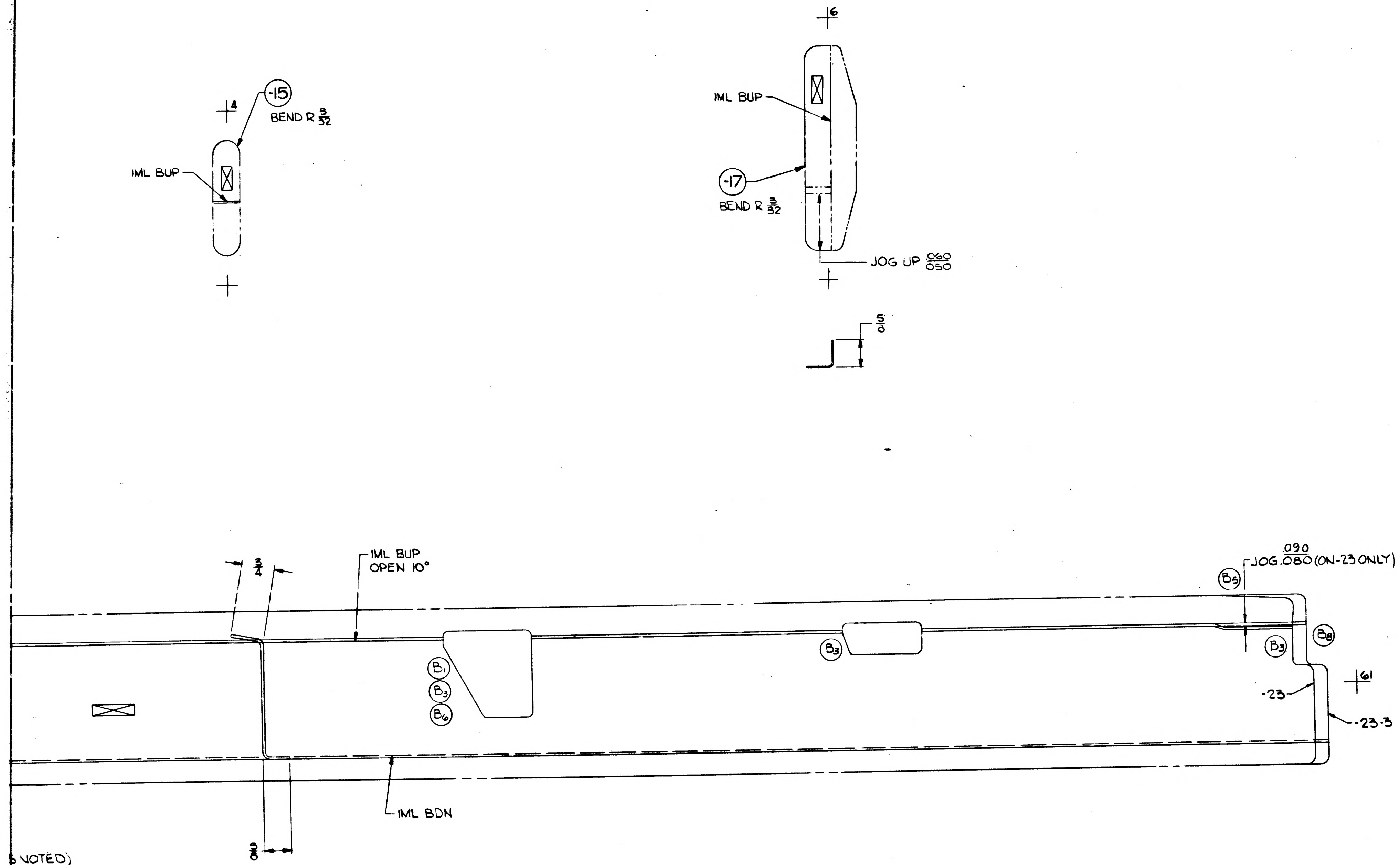

-11
4
BEND R 3/32
IML BUP
.097-.102 (#40 DRILL)
2 HOLES
-13
5
IML BUP
B3
B3
-23
B1
233 (SAME AS -23 EXCEPT AS NOTED)
B9

CODE IDENT 26512

LDW280-10848 SH 3

01/03 NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS



-15
BEND R 3/32
IML BUP
4
6
IML BUP
-17
BEND R 3/32
JOG UP .060/.050
5/8
IML BUP
OPEN 10°
3/4
JOG .090/.080 (ON -23 ONLY)
B5
B1
B3
B6
B3
B3
B8
61
-23
-23-3
IML BDN
3/8

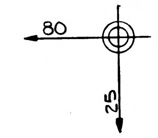
s NOTED)

02/03 NAS 9-1100

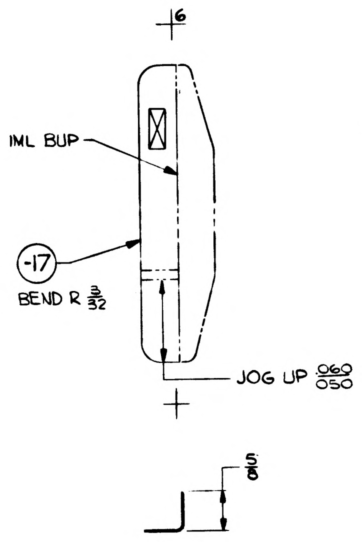
CODE IDENT 26512
LDW280-10848 SH 3

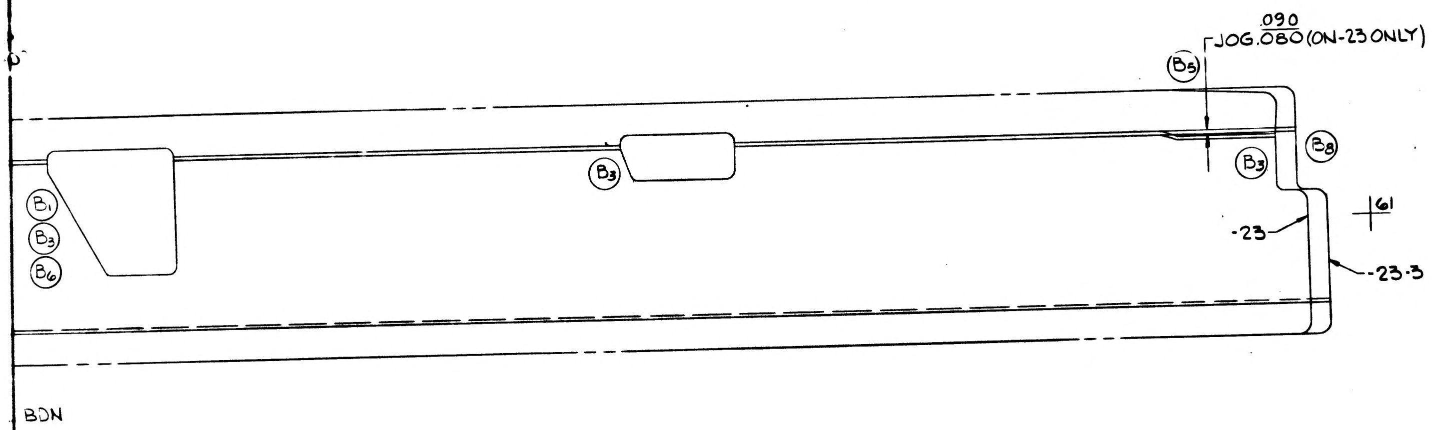
LEM
MODEL OR END IT

4 3 2 1



NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS





MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 28x 94

PRINTING INFO ONLY

FULL SIZE SHEET AREA (30x 96) = 20 SQ. FT.
½ SIZE SHEET AREA (¼ OF FULL) = 5 SQ. FT.

PRINT TRIM LINE

C

B

A

LDW280-10848 B

LDW280-10848 B

03/03

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK		
SIZE H	CODE IDENT NO. 26512	LDW280-10848 B
LEM MODEL OR END ITEM	SCALE FULL	SHEET 3.00

3FR

ENG 73-6 6-64

4 3 2 1

FOR PHOTO REPRODUCTION

K2

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53222	LM-15 (45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
		LM-4(34)	1
	LDW280-53222	LM-3(33)	1
	LDW280-28222	LM-2(32)	1
	LDW280-28222	LM-1(31)	1
	LDW280-28222	LTA-8(18)	1
	LDW280-28222	QUAL TEST(70)	1
LM	LDW280-53222	PA-1(47)	1

PART NO. LDW280-10848-13

GAEC SCH NO. 30

LDW280-10848 C

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28222	LM-2(32)	1
LM	LDW280-28222	LM-1(31)	1
LM	LDW280-28222	LTA-8(18)	1

PART NO. LDW280-10848-23

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53222	LM-15(45)	1
		LM-14 (44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
		LM-4(34)	1
	LDW280-53222	LM-3(33)	1
	LDW280-28222	LM-2(32)	2
	LDW280-28222	LM-1(31)	2
	LDW280-28222	LTA-8(18)	2
	LDW280-28222	QUALTEST(70)	1
LM	LDW280-53222	PA-1(47)	1

PART NO. LDW280-10848-11

GAEC SCH NO. 30

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.01	1.10	1.11	2.00	3.00			
REV	C	C	C	C	B	B			
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -23-3

GRUMMAN REL C INFO C

PRIM NO.	JK (001)		
215	MP-14C-95/1	R5 +12	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ± 1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY	J. KORYKORA 4/9/66	WEIGHTS	MANDRAS 4/6
LAYOUT BY	J. KORYKORA 4/9/66		
CHECKED BY			
GR LEADER	P HENTON 4/12		
V D I	W BISCHOFF 4/12		
STRUCT	AP JV FEB 4/14	PROJ ENGR	J ALBER/W.C. 4/19
STRUCT	HILDERMAN 4/14	REL GROUP	A. CARAMANICA 4/21/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP
ASCENT STAGE~ RIGHT HAND MID SECTION
ENGINE COMPARTMENT

SIZE B

CODE IDENT NO. 26512

LDW280-10848 C

SCALE NONE

SHEET 1.00 OF 6

ENG 77.1 12-66

THIS DWG SUPERSEDES LDW 280-10848 NO CHANGE

01

NAS 9-1100

LDW280-10848 C

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53222	LM-15(45)	2
		LM-14(44)	2
		LM-13(43)	2
		LM-12(42)	2
		LM-11(41)	2
		LM-10(40)	2
		LM-9(39)	2
		LM-8(38)	2
		LM-7-(37)	2
		LM-6(36)	2
		LM-5(35)	2
		LM-4(34)	2
	LDW280-53222	LM-3(33)	2
	LDW280-28222	LM-2(32)	2
	LDW280-28222	LM-1(31)	2
	LDW280-28222	LTA-8(18)	2
	LDW280-28222	QUALTEST(70)	1
LM	LDW280-53222	PA-1(47)	2

PART NO. LDW280-10848-17

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53222	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
		LM-4(34)	1
	LDW280-53222	LM-3(33)	1
	LDW280-28222	QUALTEST(70)	1
LM	LDW280-53222	PA-1(47)	1

PART NO. LDW280-10848-23-3

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53222	LM-15(45)	2
		LM-14(44)	2
		LM-13(43)	2
		LM-12(42)	2
		LM-11(41)	2
		LM-10(40)	2
		LM-9(39)	2
		LM-8(38)	2
		LM-7(37)	2
		LM-6(36)	2
		LM-5(35)	2
		LM-4(34)	2
	LDW280-53222	LM-3(33)	2
	LDW280-28222	LM-2(32)	1
	LDW280-28222	LM-1(31)	1
	LDW280-28222	LTA-8(18)	1
	LDW280-28222	QUALTEST(70)	1
LM	LDW280-53222	PA-1(47)	2

PART NO. LDW280-10848-15

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET									
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED
LAST DASH NO. USED
GRUMMAN REL INFO
PRIM NO.

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO.
LINE ITEM
DOCUMENTATION TYPE
DRAWN BY
LAYOUT BY
CHECKED BY
PROJ ENGR
REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-10848 C
SCALE NONE
SHEET 1.01 OF

ENG 77 L 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE~LAST REV NO CHANGE SH 1 OF 3 WAS SH 1 OF 1 LOFTED DWG WAS DIMENSIONED DWG R. COLLETT 7/16/66						
A	1	1.00, 2.00 & 3.00						DCRF 323-1079 Ⓑ	IN FIELD & MODEL BLOCK REMOVE -19, ADDED -21 IN MODEL BLOCK REMOVE LEM-3(33), LEM-4(34), LEM-5(35) & LEM-6(36)	LTA-8 LEM-1 LEM-2		-19	COLLETT 7/18/66		
B	1	1.00, 2.00 & 3.00						EO B1	IN FIELD & MODEL BLOCK REMOVED -21, ADDED -23	LTA-8, LM-1, LM-2		-21	J. GARRAFFO 4-12-67		
	2	1.00, 2.00					✓	LEO 280-317	FOR -11, -13, -15, -17 & -23 ADDED QUALIFICATION TEST REQUIREMENTS.	QUAL TEST (70)	NOT	REQD			
	3	1.00, 3.00					✓	EO B3	IN FIELD FOR -23 BEAM REVISED TRIM OF CUTOUTS AND FLANGE.	LTA-8, LM-1, LM-2	✓				
	4	1.00, 2.00					✓	LEO 280-354	ADDED LM-3(33) THRU LM-15(45) & QUAL TEST (70) REQUIREMENTS FOR -11, -13, -15, -17 & -23. ADDED SH 1.01	LM-3 THRU 15, QUAL TEST	NOT	REQD			
	5	1.00, 3.00						EO B5	ON -11 ADDED JOG .080 x 1 9/16	LTA-8, LM-1 THRU LM-15 QUAL TEST (70)	✓				
	6	1.00, 3.00						EO B6	IN FIELD FOR -23 CORRECTED PICTURE OF CUTOUT	NOT REQD	NOT	REQD			
	7	1.00, 3.00						LEO 280-419	ON INCORP OF EO B5 -23 WAS -11	LTA-8, LM-1 THRU LM-15 QUAL TEST (70)	NOT	REQD			
	8	1.00, 2.00 3.00						EO B8	ADDED -23-1. REMOVE JOG AND ADD .080 JOG x 1 9/16 RESTRICT -23 TO LTA-8, LM-1, LM-2 REMOVED LM-3 THRU LM-15 & QUAL TEST	LM-3 THRU LM-15 QUAL TEST		-23			
	9	1.00, 2.00 3.00						EO B9	REMOVED -23-1, ADDED -23-3	LM-3 THRU LM-15		-23-1			
	10	1.00, 1.01 1.10						EO B10	IN MOD/BLOCK FOR -15 (2) REQD/MOD (WAS) 1 FOR LDW280-53222. FOR -11 (1) REQD/MOD (WAS) 2 FOR LDW280-53222	LM-3 THRU LM-15		-11			
C	1	1.00, 1.01					✓	LEO 280-508	ADDED PA-1 (W5) EFF ON -11, -13, -15, -17 & -23-3 AS	PA-1 (W5)					
	2	1.00, 1.10					✓		REF LEO 280-354-B4 ADDED QUAL TEST (70) N/A LDW280-53222 TO -11, -13, -15, -17 & -23, NOT APPLICABLE AS	LM-3 THRU LM-15 QUAL TEST	NOT	REQD			

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS					
A	✓									
C										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10848	C
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
C	3	1.00,1.01 1.11							REF EO B9 ON-23-3 ADDED QUAL TEST (70) TO N/A LDW280-28222. ADDED SH1.11	QUAL TEST(70)	NOT	REQD	GARRAFFO 4-12-67 AS		4/5/67
	4						✓		REF LEO 508(EOC1) ADDED PA-1('N5) SHOULD BE PA-1(47)	PA-1 (47)					

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS
C		FAR 4/28/67	GJS FEP		

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10848	C

SCALE NONE SHEET 1.11

ENG 77.16 3-66

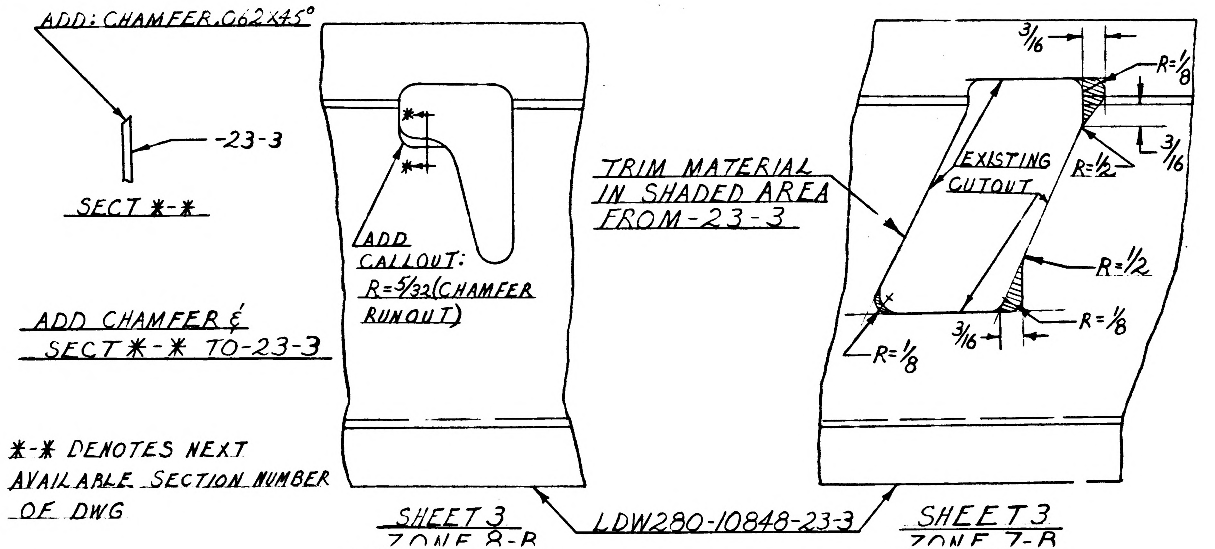
01 NAS 9-1100

ENG 32.1 REV 3-65

B

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10848
EO NO. D1
CONTROL INFO NO. LM-3-4817


ADD: CHAMFER .062 X 45°
-23-3
SECT ✱-✱
ADD CALLOUT: R=5/32 (CHAMFER RUNOUT)
ADD CHAMFER & SECT ✱-✱ TO -23-3
✱-✱ DENOTES NEXT AVAILABLE SECTION NUMBER OF DWG
TRIM MATERIAL IN SHADED AREA FROM -23-3
EXISTING CUTOUT
3/16
R=1/8
3/16
R=1/2
R=1/2
R=1/8
3/16
R=1/8
SHEET 3 ZONE 8-B
LDW280-10848-23-3
SHEET 3 ZONE 7-B

DETAIL SPEC REQ	☐	CL II ENGRG CHG	✓	CL I ENGRG CHG	☐

3

REASON FOR EO: TO ELIMINATE INTERFERENCE WITH FITTINGS ON INSTL.

DESCRIPTION OF EO: ON SH3 ZONE 7-B ON -23-3 TRIMMED MATERIAL FROM CUTOUT (3 PLACES). IN ZONE 8-B ADDED CHAMFER & CALLOUT "R = 5/32 (CHAMFER RUNOUT)." ADDED SECTION ✱-✱ & CALLOUT "CHAMFER .062 X 45°".

GAEC C EO RELEASE: JK

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3(33)	
		THRU	
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY			SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
						BM		RMc
DATE	/					3-20-67	3-20-67	3-21-67	3/20/67

PRIORITY: C
DRAWING TITLE: CLIP-ASCENT STAGE-R.H. MID-SECT-ENGINE COMPARTMENT
DRAWING NO.: LDW280-10848
EO NO.: D1

ISSUED BY LIAISON, WM. OCHSE, X2151 SECTION VDI GROUP NO. 335 PL 35

01

NAS 9-1100

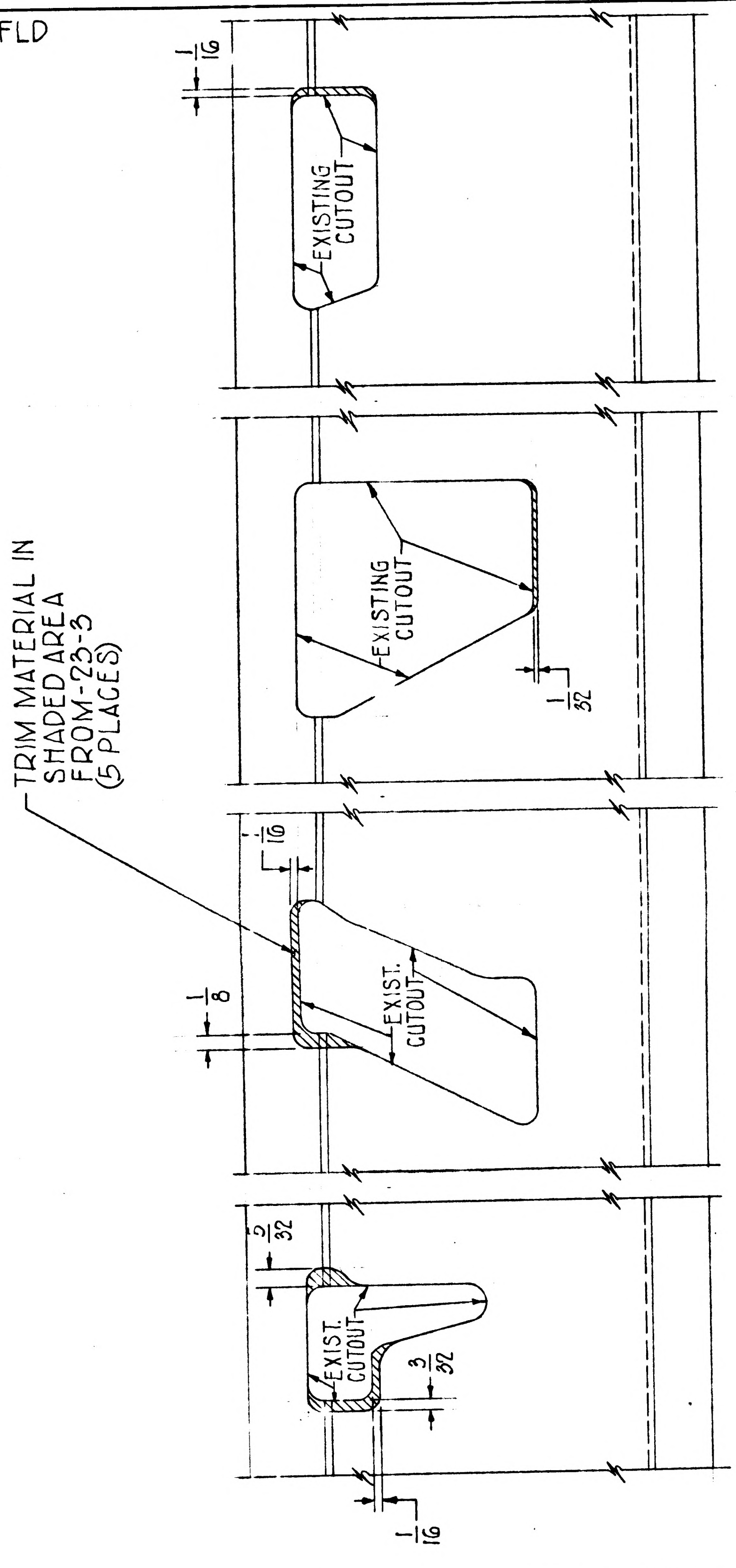
β

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10848 | EO NO. D3
CONTROL INFO NO. LM3-5738

ON-23-3 IN FLD



1/16
EXISTING CUTOUT
EXISTING CUTOUT
1/32
TRIM MATERIAL IN SHADED AREA FROM-23-3 (5 PLACES)
1/16
1/8
EXIST. CUTOUT
3/32
EXIST. CUTOUT
3/32
1/16

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

REASON FOR EO
TO ELIMINATE INTERFERENCE WITH FITTINGS ON INSTL.

DESCRIPTION OF EO
ON-23-3 IN FLD
REVISED TRIM (5 PLACES)

GAEC EO RELEASE ✓ (3)

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CON'R UNIT NO.
LM		LM-3(33) THRU	LM-15(45)
		QUAL TEST (70)	PA-1(47)

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK ✓ SCRAP

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
APPROVE BY				—	BM			
DATE	12/21/67				12-13-67	12-13-67	12/21/67	12-15-67
	VDI							

PRIORITY C3

DRAWING TITLE ASCENT STAGE CLIP RIGHT HAND MID SECTION ENGINE COMPARTMENT

DRAWING NO. LDW280-10848

EO NO. D3

ISSUED BY LIASON V.BOLLO/G.DIEHL (x2151) 12-11-67 VB SECTION V.D.I. GROUP NO. 335 PL 25

0 1
NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53222	LM-15(45)	1
↕	↕	THRU	
LM	LDW280-53222	LM-6(36)	1

PART NO. LDW280-10849-33

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53222	PA-1(47)	1
↕	↕	LM-15(45)	1
		THRU	
LM	LDW280-53222	LM-3(33)	1

PART NO. LDW280-10849-31

LDW280-10849 C

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28222	QUALTEST(70)	1
LM	LDW280-28222	LM-2(32)	2
LM	LDW280-28222	LM-1(31)	2
LM	LDW280-28222	LTA-8(18)	2

PART NO. LDW280-10849-29

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53222	QUALTEST(70	1
LM	LDW280-28222	QUAL TEST (70)	1
↕	↕	LM-2(32)	2
		LM-1(31)	2
LM	LDW280-28222	LTA-8(18)	2

PART NO. LDW280-10849-21

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53222	PA-1(47)	1
↕	↕	QUAL TEST (70)	1
		LM-5(35)	1
		LM-4(34)	1
	LDW280-53222	LM-3(33)	1
	LDW280-28222	QUAL TEST (70)	1
	↕	LM-2(32)	2
		LM-1(31)	2
LM	LDW280-28222	LTA-8(18)	2

LDW280-10849-19

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53222	PA-1(47)	1 EA
↕	↕	QUAL TEST (70)	1 EA
		LM-15(45	1 EA
		THRU	
	LDW280-53222	LM-3(33)	1 EA
	LDW280-28222	QUAL TEST (70)	1 EA
	LDW280-28222	LEM-2(32)	2 EA
	LDW280-28222	LEM-1(31)	2 EA
LM	LDW280-28222	LTA8(18)	2 EA

PART NO. LDW280-10849-25,-27

GAEC SCH NO. 30

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	C	C	C		C				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO C	
LAST DASH NO. USED	-33	PRIM NO. 215	JK(001) ME-K-6/13/9

ENG 77 1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
± 1/32 ±.020 ± 1/2

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS-9-1100
LINE ITEM * 1
DOCUMENTATION TYPE II

DRAWN BY	KORYKORA 7/14/66	RELIABILITY	
LAYOUT BY	KORYKORA 7/14/66		
CHECKED BY JBF			
GRP LEADER	P. HENTON 4/12		
VEH DES INT	W. BISCHOFF 4/12		
STRUCTURES	AP FEB 4/14	PROJ ENGR	J. ALBER 4/19/66
STRUCTURES	HILDERMAN 4/14	REL GROUP	BOTTI 4/21/66
WEIGHTS	MANDRAS 4/16		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
RIGHT HAND, ASCENT STAGE, MID SECTION
ENGINE COMPARTMENT SHIELD

SIZE	CODE IDENT NO.		
B	26512	LDW280-10849	C
SCALE NONE		SHEET 1.00 OF 4	

SUPERSEDES LDW280-10849 'NO CHANGE'

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE~LAST REV NO CHANGE, SH 1.00 OF 4 WAS SH 1 OF 1. LOFTED DWG WAS DIMENSIONED DWG 7-14-66 B.ONEILL						
A	1	1.00 1.10						EOA1	FOR-17 ADDED "THIS VIEW TYP BOTH ENDS, -15 ADDED JOG UP .050	NOT REQD	NOT REQ'D		ONEILL 7/14/66		
	2	1.00 2.00 3.00						DCRF 323-1079	IN FIELD & B/M REMOVED -11, -13 & -15, ADDED -19, -21 -23 & -25 IN MOD/BLK REMOVED LEM-3(33), LEM-4(34), LEM-5(35) & LEM-6(36)	LTA-8 LEM-1 LEM-2		-11 -13 -15			
	3								IN FIELD & B/M REMOVE -17 ADDED -27			-17			
B	1	1.00, 1.10 & 2.00						E.O. B1	IN B/M GOVT. SPEC (-19, -21, -25 & -27), QQ-A-250/12 WAS QQ-A-250/18.	NOT REQD	NOT	REQD	NISBET 8-27-66		
C	1	1.00					✓	LE0280-317	FOR -19, -21, -25 & -27 ADDED QULIFICATION TEST REQUIREMENTS.	QUAL TEST	NOT	REQ'D	R. J. FRIZZI 6-12-69		
	2	1,2,3.00	C3					EO C2	REMOVED -23 & ADDED -29	LTA-8, LM-1 & 2 QUAL TEST (70)		-23			
	3	1.00					✓	LE0280-354	ADDED LM-3 (33) THRU LM-15 (45) & QUAL TEST (70) & REQUIREMENTS	LM3 THRU LM15, QUAL TEST	NOT	REQ'D			
	4	1,2,3.00	C6					EO C4	ADDED -31 REMOVED EFF LM-3 (33) THRU LM-15 (45) FROM -21	LM-3 THRU LM-15		-21			
	5	1.00					✓	LE0280-508 LCD 1124	ADDED PA-1 (47) EFF -19, -25, -27 & -31	PA-1 (47)	NOT	REQ'D			
	6	1.00					✓	LE0280-739 LCD 2104	FOR -21, -25 & -27 ADDED QUAL TEST REQUIREMENTS	QUAL TEST (70)	NOT	REQ'D			
	7	1,2,3.00	C7				✓	EO C7	CREATED -33 REMOVED EFF LM-6 THRU LM-15 FROM -19	LM6 THRU LM15		-19 H.D.	F.C.G		
	8	3.00	C6				✓	EOC8 Ⓡ	IN FLD/DWG TRIMMED -31	LM-9 THRU LM-15	✓	J.V.			

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10849	C
SCALE NONE			SHEET 1.10

ENG 77.3 5-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10849-33	E	CHANNEL	AL ALLOY SH	QQ-A-250/12	7075	.050 × 5 × 18	T6	88	
								LDW280-10849-31	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.050 × 2 × 17	T6	88	
								LDW280-10849-27	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.050 × 3 × 15½	T6	88	
								LDW280-10849-25	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075-	.050 × 1⅞ × 6	T6	88	
								-29	E	DOUBLER	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 × 2 × 16	NONE	88	
								-21	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.050 × 2 × 16¾	T6	88	
								LDW280-10849-19	E	CHANNEL	AL ALLOY SH	QQ-A-250/12	7075	.050 × 4⅞ × 17¾	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T6	HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP , BETHPAGE, L. I., NEW YORK

SIZE B | CODE IDENT NO. 26512 | LDW280 - 10849 | C

SCALE NONE | SHEET 2.00

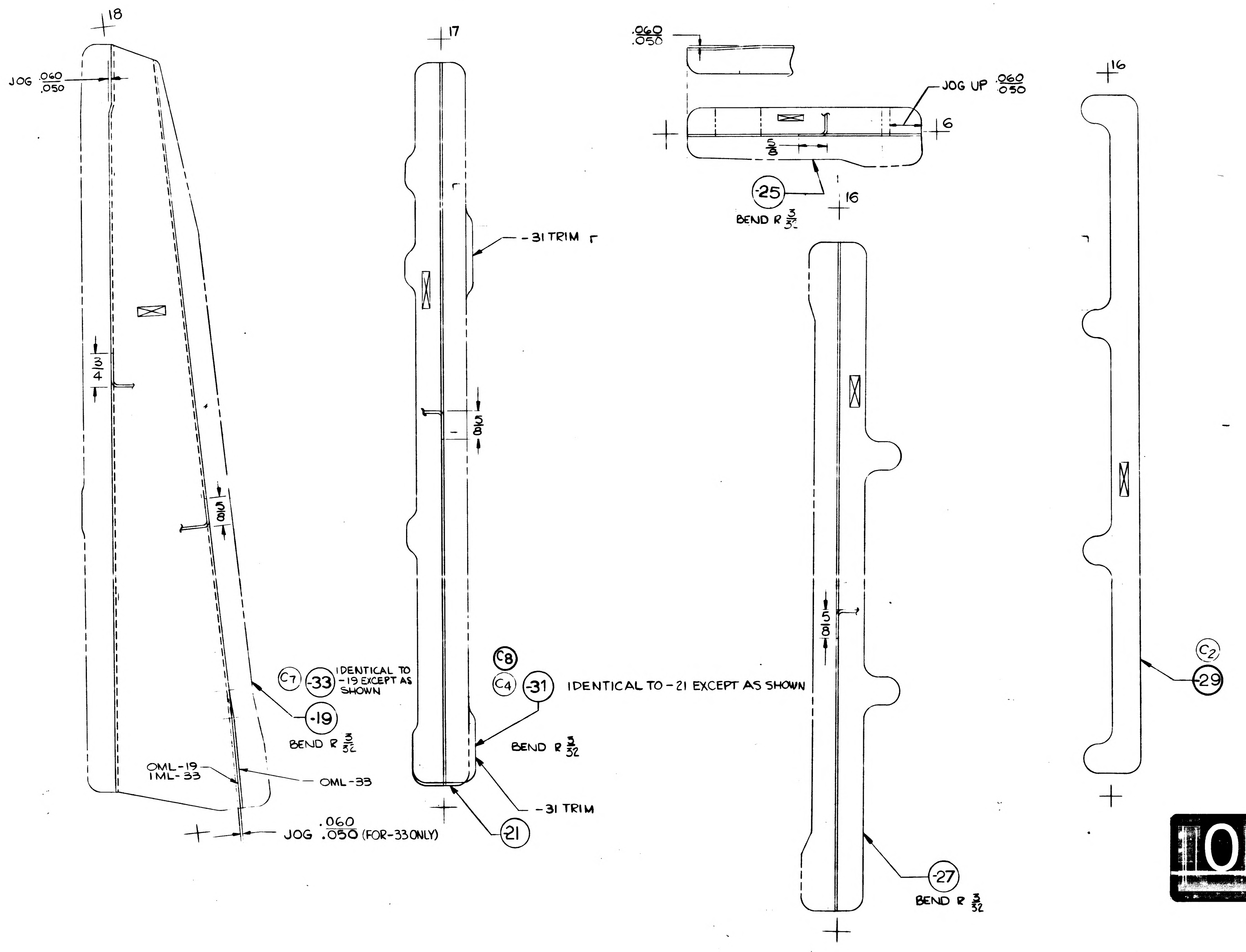
ENG 77.2 7-65

01

NAS 9-1100

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.



18
JOG .060/.050
3/4
.010
C7 -33 IDENTICAL TO -19 EXCEPT AS SHOWN
-19
BEND R 3/32
OML-19
IML-33
OML-33
JOG .060/.050 (FOR-33 ONLY)
17
-31 TRIM
5/8
C8
C4 -31 IDENTICAL TO -21 EXCEPT AS SHOWN
BEND R 3/32
-31 TRIM
21
.060/.050
JOG UP .060/.050
16
5/8
-25
BEND R 3/32
16
.015
-27
BEND R 3/32
16
C2
29

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBERSTAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-10849C

0-1 NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE F	CODE IDENT NO. 26512	LDW280-10849	C
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28227	LEM-6(36)	2EA
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
		LEM-1(31)	
LEM	LDW280-28227	LTA-8(18)	2EA
PART NO. LDW280-10850-75-77-79			
LEM	LDW280-28228	LEM-6(36)	1EA
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
		LEM-1(31)	
	LDW280-28228	LTA-8(18)	
	LDW280-28227	LEM-6(36)	
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
		LEM-1(31)	
LEM	LDW280-28227	LTA-8(18)	1EA
PART NO. LDW280-10850-25,-37 THRU-43		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28228	LEM-6(36)	2EA
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
		LEM-1(31)	
LEM	LDW280-28228	LTA-8(18)	2EA
PART NO. LDW280-10850-65-67-69			
LEM	LDW280-28228	LEM-6(36)	1EA
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
		LEM-1(31)	
LEM	LDW280-28228	LTA-8(18)	1EA
PART NO. LDW280-10850-33 & -45 THRU -63		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28228	LEM-6(36)	2EA
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
		LEM-1(31)	
	LDW280-28228	LTA-8(18)	
	LDW280-28227	LEM-6(36)	
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
		LEM-1(31)	
LEM	LDW280-28227	LTA-8(18)	2EA
PART NO. LDW280-10850-71-73			
LEM	LDW280-28227	LEM-6(36)	1EA
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
		LEM-1(31)	
LEM	LDW280-28227	LTA-8(18)	1EA
PART NO. LDW280-10850-11THRU-23 -27 THRU-31 & -35		GAEC SCH NO. 30	

2

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	2.01	3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO	
LAST DASH NO. USED	-79	PRIM NO. 215	Ve(001) MF12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO.	NAS 9-1100	LINE ITEM	DOCUMENTATION TYPE II
DRAWN BY	A. BISHOP 2/7/66	RELIABILITY	
LAYOUT BY	G HERREL		
CHECKED BY	J Kartzmar 3-21-66		
GR LEADER	Hert. 4/7/66		
VEH DES INT	4/7		
STRUCTURES		PROJ ENGR	J Adha/Rec 4-12-66
STRUCTURES	Hildemann 4/8	REL GROUP	B.H. 4-11-66
WEIGHTS	A Kolb 4-11		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TUBE
LEFT & RIGHT HAND~UPPER ASCENT STAGE~MID SECTION~THERMAL

SIZE	CODE IDENT NO.	
B	26512	LDW280-10850
SCALE	NONE	SHEET 1.00 OF 4

ENG 77.1 9-64

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10850-71	E	TUBE	AL ALLOY TUB.	SEE NOTES 2 & 3	2219-T81	1.000 OD x .040 x 15	CM	76	
								-69						1.000 OD x .040 x 22⅞			
								-67						1.000 OD x .040 x 30⅛			
								-65						.750 OD x .040 x 27¾			
								-63						.750 OD x .040 x 30			
								-61						.750 OD x .040 x 31¼			
								-59						.750 OD x .040 x 43			
								-57						.750 OD x .040 x 23¼			
								-55						.750 OD x .040 x 27¾			
								-53						.750 OD x .040 x 24⅛			
								-51						.750 OD x .040 x 32⅜			
								-49						.750 OD x .040 x 23¼			
								-47						.750 OD x .040 x 28⅝			
								-45						.750 OD x .040 x 43⅜			
								-43						.750 OD x .040 x 28			
								-41						.750 OD x .040 x 25½			
								-39						.750 OD x .040 x 31¾			
								-37						.750 OD x .040 x 283/4			
								-35						.750 OD x .040 x 32⅛			
								-33						.750 OD x .040 x 28			
								-31						.750 OD x .040 x 39½			
								-29						.750 OD x .040 x 29¼			
								-27						.750 OD x .040 x 26			
								-25						.750 OD x .040 x 31¾			
								-23						.750 OD x .040 x 30			
								-21						.750 OD x .040 x 24			
								-19						.750 OD x .040 x 42			
								-17						.750 OD x .040 x 32¼			
								-15						.750 OD x .040 x 24½			
								-13						.750 OD x .040 x 28			
								LDW280-10850-11	E	TUBE	AL ALLOY TUB.	SEE NOTES 2 & 3	2219-T81	.750 OD x .040 x 28	CM	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						CM	CHEM-MILL	LSP14-26100
						76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10850

SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10850-79		TUBE	AL ALLOY TUB	SEE NOTES 2 & 3	2219-T81	.750 OD ×.040 × 25⅞	CM	76	
		-77		↕	↕	↕	↕	1.000 OD ×.040 × 32⅜	↕	↕	
		-75		↕	↕	↕	↕	1.000 OD ×.040 × 22⅛	↕	↕	
		LDW280-10850-73	E	TUBE	AL ALLOY TUB	SEE NOTES 2 & 3	2219-T81	.750 OD ×.040 × 20½	CM	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						CM	CHEM-MILL	LSP 14-26100
						76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10850

SCALE NONE

SHEET 2.01

ENG 77.2 7-65

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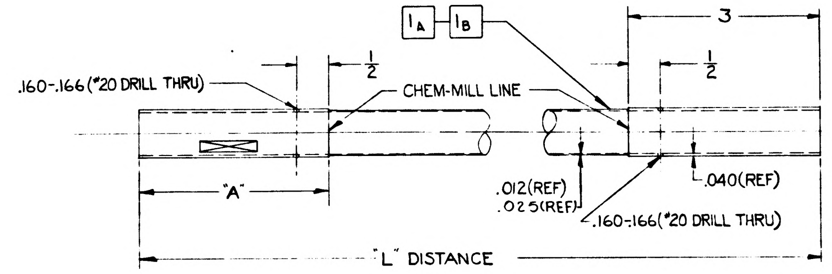
NAS 9-1100



NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS
2. MATERIAL SHALL MEET MIL-A-8920 FOR CHEMICAL COMPOSITION AND WWT 700 C FOR TOLERANCE AND TENSILE TESTING ONLY.
3 MATERIAL 2219-T81 AL ALLOY DRAWN TUBE CHEMICAL COMPOSITION PER MIL-A-8920 WITH PROPERTIES AS FOLLOWS
   LONGITUDINAL Ftu 60000 PSI MIN
   LONGITUDINAL Fty 42000 PSI MIN
   ELONGATION 6% MIN

DWG NO.	"L" DISTANCE	"A" DIM.
LDW280-10850 - 11	25	3
- 13	25 1/16	3
- 15	21 1/2	3
- 17	29 3/8	3 1/2
- 19	39	3
- 21	20 15/16	3
- 23	26 15/16	3
- 25	28 3/4	3 1/2
- 27	22 15/16	3
- 29	26 3/16	3
- 31	36 7/16	3
- 33	26 5/16	3
- 35	29 1/16	3
- 37	25 11/16	3
- 39	28 13/16	3
- 41	22 1/2	3
- 43	24 15/16	3 1/2
- 45	40 3/8	3
- 47	25 5/8	3
- 49	20 5/16	3
- 51	29 7/16	3 1/2
- 53	21 1/16	3
- 55	24 7/8	3 1/4
- 57	20 1/4	3
- 59	40	3
- 61	28 3/16	3
- 63	27 1/16	3
- 65	24 3/4	3
- 67	27 1/8	3 1/4
- 69	19 7/8	3
- 71	12	3
- 73	17 1/2	3
- 75	19 1/8	3
- 77	29 3/8	3 1/4
LDW280-10850 - 79	22 7/8	3

LDW280-10850-13 THRU -17, -21 THRU -29, -33 THRU -37, -41, -43, -47 THRU -57 & -63 THRU -79

CHEM-MILL LINE TOLERANCE
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
1A	.012 $^{+.003}_{-.001}$	.028(REF)

LDW280-10850-11, -19, -31, -39, -45, -59 & -61

CHEM-MILL LINE TOLERANCE
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
1B	.025 $^{+.003}_{-.001}$	.015(REF)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE AL[illegible]RS. BREAK ALL E[illegible] .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK
LEM
MODEL OR END ITEM
SIZE D
CODE IDENT NO. 26512
LDW280-10850
SCALE NONE
SHEET 3.00

LDW280-10850

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28228	LEM-6(36)	1EA
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
		LEM-1(31)	
LEM	LDW280-28228	LTA-8(18)	1EA
PART NO LDW280-10851-17			
LEM	LDW280-28227	LEM-6(36)	1EA
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
		LEM-1(31)	
LEM	LDW280-28227	LTA-8(18)	1EA
PART NO. LDW280-10851-11		GAEC SCH NO. 30-	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28228	LEM-6(36)	1EA
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
		LEM-1(31)	
	LDW280-28228	LTA-8(18)	
	LDW280-28227	LEM-6(36)	
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
		LEM-1(31)	
LEM	LDW280-28227	LTA-8(18)	1EA
PART NO. LDW280-10851-13		GAEC SCH NO. 30-	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28228	LEM-6(36)	2EA
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
		LEM-1(31)	
	LDW280-28228	LTA-8(18)	
	LDW280-28227	LEM-6(36)	
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
		LEM-1(31)	
LEM	LDW280-28227	LTA-8(18)	2EA
PART NO. LDW280-10851-15		GAEC SCH NO. 30-	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO			
LAST DASH NO. USED	-17	PRIM NO.	1E(001)		
		215	MP1-2		RS 4-12

ENG 77.1 9-64

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM 1 | DOCUMENTATION TYPE II

DRAWN BY	A BISHOP 2-28-66		
LAYOUT BY	G HERREL	RELIABILITY	
CHECKED BY	3-11-66		
GR LEADER	4/7/66		
VEH DES INT	4/7		
STRUCTURES	JV 4/12	PROJ ENGR	4-13-66
STRUCTURES	Hilberman 4/12	REL GROUP	G. Caramanna 4-15-66
WEIGHTS	Lamont 4-13		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TUBE
L.H & R.H ~ UPPER ~ ASCENT STAGE
MID SECTION ~ THERMAL

SIZE	CODE IDENT NO.	
B	26512	LDW280-10851
SCALE	NONE	SHEET 1.00 OF 3

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10851-17	E	TUBE	AL ALLOY TUB.	SEE NOTES 3&4	2219-T81	.750 OD×.040×28 5/8	CM	76	
		↕ -15	↕	↕	↕	SEE NOTES 3&5	2219	.750 OD×.040×18 5/8	CM & FP T62	76	
		↕ -13	↕	↕	↕	SEE NOTES 3&4	2219-T81	.750 OD×.040×35	CM	76	
		LDW280-10851-11	E	TUBE	AL ALLOY TUB.	SEE NOTES 3&4	2219-T81	.750 OD×.040×27 3/8	CM	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						CM	CHEM-MILL	LSP14-26100
						T62	HEAT TREAT	MIL-H-6088
						76	ALODINE	LSP14-9010
						FP	ZYGLO	MIL-I-6866

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

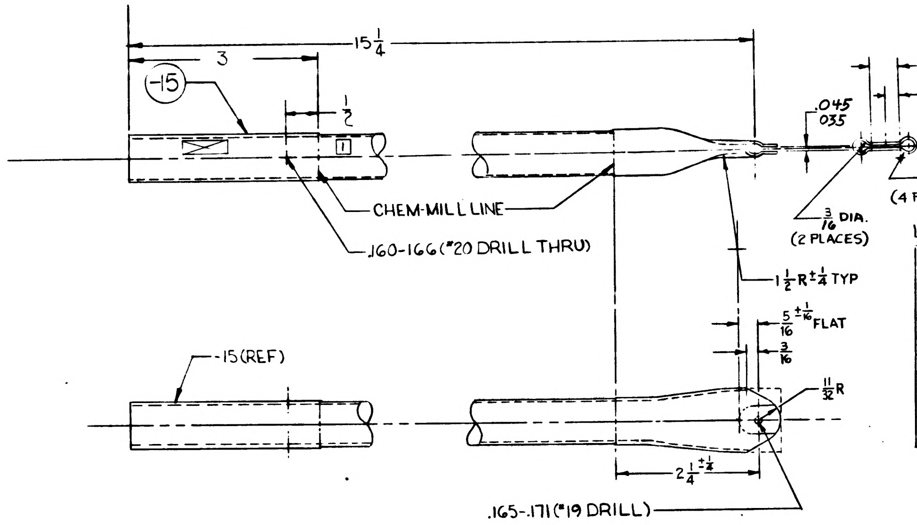
SIZE	CODE IDENT NO.	
B	26512	LDW280-10851

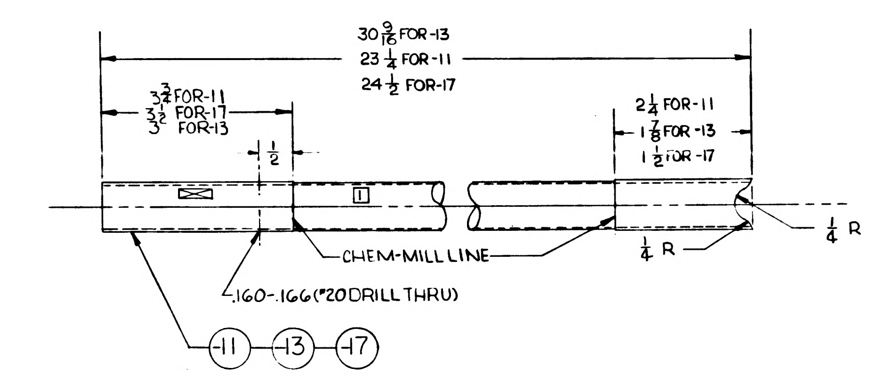
SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


15 1/4
3
-15
1/2
1
CHEM-MILL LINE
.160-.166 (#20 DRILL THRU)
.045
.035
7/16 FLAT
7/32
3/32 R
(4 PLACES)
3/16 DIA.
(2 PLACES)
1 1/2 R ±1/4 TYP
5/16 ±1/16 FLAT
3/16
11/32 R
-15 (REF)
2 1/4 ±1/4
.165-.171 (#19 DRILL)


30 9/16 FOR -13
23 1/4 FOR -11
24 1/2 FOR -17
3 3/4 FOR-11
3 1/2 FOR-17
3 FOR-13
1/2
2 1/4 FOR-11
1 7/8 FOR -13
1 1/2 FOR -17
1
CHEM-MILL LINE
1/4 R
1/4 R
.160-.166 (#20 DRILL THRU)
-11
-13
-17

NOTES:
1 NO TOOLING HOLE PERMITTED IN PARTS
2 FLATTEN TUBE END PER DWG IN ANNEALED CONDITION
3 MATERIAL SHALL MEET MIL-A-8920 FOR CHEMICAL COMPOSITION AND WWT 700C FOR TOLERANCE AND TINSILE TESTING
4 MATERIAL 2219-T81 AL ALLOY DRAWN TUBE CHEMICAL COMPOSITION PER MIL-A-8920 WITH PROPERTIES AS FOLLOWS:
LONGITUDINAL Ftu 60,000 PSI MIN.
LONGITUDINAL Fty 42,000 PSI MIN. ELONGATION 6% MIN
5 MATERIAL 2219-T62 AL ALLOY DRAWN TUBE CHEMICAL COMPOSITION PER MIL-A-8920 WITH PROPERTIES AS FOLLOWS:
LONGITUDINAL Ftu 54,000 PSI MIN.
LONGITUDINAL Ftu 36,000 PSI MIN. ELONGATION 6% MIN

LDW280-10851-15

CHEM MILL LINE TOLERANCE:
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	$.012^{+.003}_{-.001}$	.028 (REF)

LDW280-10851-11, -13, -17

CHEM-MILL LINE TOLERANCE:
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	$.025^{+.003}_{-.001}$	.015 (REF)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	DWG NO.
LEM	D	26512	LDW280-10851

SCALE FULL
SHEET 3.00

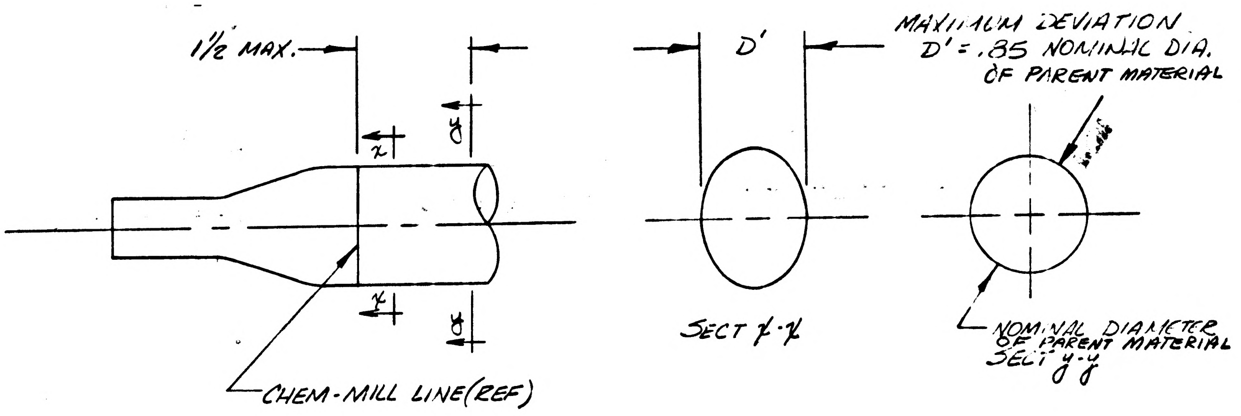
H G.

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 258
CONTROL INFO NO. LEM-2-2704

IN F/D ADD NOTE *
AT THE LUG END OF FORMED TUBES, THE FOLLOWING DEVIATIONS ARE PERMISSIBLE.


1½ MAX.
X
Y
CHEM-MILL LINE(REF)
D'
SECT X-X
MAXIMUM DEVIATION
D' = .85 NOMINAL DIA.
OF PARENT MATERIAL
NOMINAL DIAMETER
OF PARENT MATERIAL
SECT Y-Y

DRAWING	CHANGE NO
LDW280-10661	B2
-10670	A3
-10851	A1
-10852	B1
-10853	A1
-10857	B'
-10858	B1
-10859	C1
-10860	B1
-10861	B1
LDW280-10864	B1

* NEXT AVAILABLE NOTE

2

DETAIL SPEC REQ ☐ | CL II ENGRG CHG ☐ | CL I ENGRG CHG ☐

REASON FOR EO: EASE OF MANUFACTURING

DESCRIPTION OF EO: IN F/D ADDED NOTE *.

GAEC EO RELEASE: LE

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
		LTA-8(18)	
LEM		LEM1-6(21-36)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK NOT | SCRAP REQD

APPROVED BY	DATE	
	9-1-66	
RH	9/14	
LBG	9/14/66	SUPPORT WIS
		REL.AB. GROUP
AH	9/14	GROUP LEADER
EZW	9-2-66	STRESS GROUP
CAW	9-2-66	LIAISON ENGRG
RMC (ES)	9-13	PROJ ENGRG
AC	9-7-66	~~[illegible]~~

PRIORITY: C2

DRAWING TITLE: SEE DRAWING

DRAWING NO.: LEO-280

EO NO.: 258

ISSUED BY LIAISON: G. MARTELL X3604/HEATON SECTION VEH DES INT GROUP NO. 335 PL 3

01
NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28228	LEM-6(36)	2 EA
		LEM-5(35)	
		LEM-4 (34	
		LEM-3(33)	
		LEM-2(32)	
		LEM-1 (31)	
	LDW280-28228	LTA-8 (18)	
	LDW280-28228	LEM-6(36)	
		LEM-5 (35)	
		LEM-4 (32	
		LEM-3 (33)	
		LEM-2(32)	
		LEM-1 (31)	
LEM	LDW280-28227	LTA-8(19)	2 EA
PART NO. LDW280-10852-11		GAEC SCH NO. 31-2	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23376	LTA-3(13)	2 EA
	LDW280-28228	LEM-6(36)	
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
		LEM-1(31)	
	LDW280-28228	LTA-8(18)	
	LDW280-28227	LEM-6(36	
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
		LEM-1(31)	
LEM	LDW280-28227	LTA-8(18)	2EA
PART NO. LDW280-10852-13		GAEC SCH NO. 31-1 31-2	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A							
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A			
LAST DASH NO. USED	-13	PRIM NO.	LE(001)		
		215	MP12		RS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	A BISHOP 3-2-66		
LAYOUT BY	G HERREL	RELIABILITY	
CHECKED BY	D. FASS 3-19-66		
GR LEADER	4/7/66.		
VEH DES INT			
STRUCTURES	JV 4/12	PROJ ENGR	4-13-66
STRUCTURES	Wilderman 4/12	REL GROUP	4-15-66
WEIGHTS	Lamorte 4-13		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TUBE
L.H.&R.H.~UPPER~ASCENT STAGE
MID-SECTION~THERMAL

SIZE	CODE IDENT NO.		
B	26512	LDW280-10852	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 9-64

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00,1.10						LE0280-165	ADDED LTA-3 REQUIREMENTS FOR-13 ADDED SH 1.10 SH 1 OF 4 WAS 1 OF 3	LTA-3(13)	NOT	REQ'D.	ERICKSON 8-12-66	X	X

CHG APPROVED

LTR	GROUP LDR	VEH.DES.INT.	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY					
A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10852	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

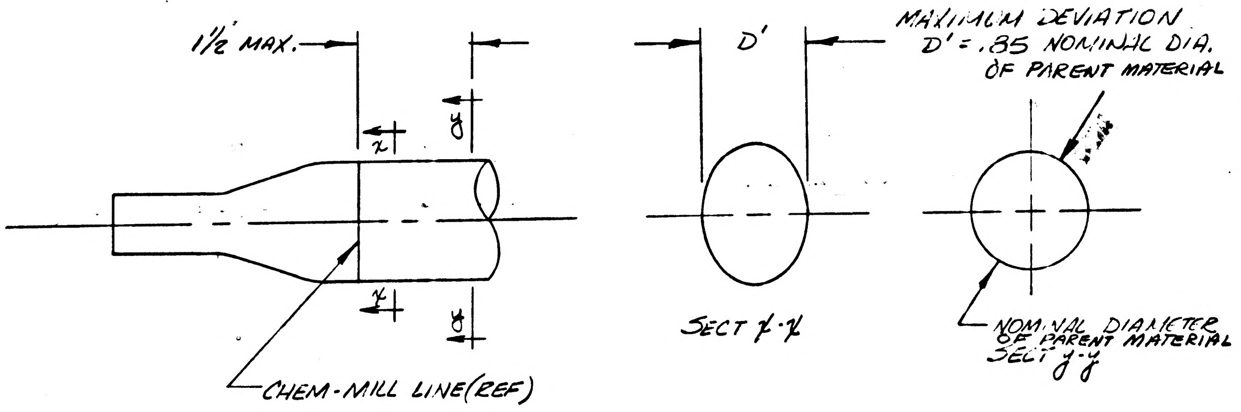
ENG 32.2 REV 3-65

HG.

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280	EO NO. 258
CONTROL INFO NO. LEM-2-2704	

IN F/D ADD NOTE *
AT THE LUG END OF FORMED TUBES, THE FOLLOWING DEVIATIONS ARE PERMISSIBLE.


1½" MAX.
X
Y
X
Y
CHEM-MILL LINE (REF)
D'
SECT X-X
MAXIMUM DEVIATION
D' = .85 NOMINAL DIA.
OF PARENT MATERIAL
NOMINAL DIAMETER OF PARENT MATERIAL
SECT Y-Y

DRAWING		CHANGE NO
LDW 280-10661	———	B2
-10670	———	A3
-10851	———	A1
-10852	———	B1
-10853	———	A1
-10857	———	B1
-10858	———	B1
-10859	———	C1
-10860	———	B1
-10861	———	B1
LDW 280-10864	———	B1

* NEXT AVAILABLE NOTE

2

DETAIL SPEC REQ ☐ CL III ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: EASE OF MANUFACTURING

DESCRIPTION OF EO: IN F/D ADDED NOTE *.

GAEC EO RELEASE: LE

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
		LTA-8 (18)	
LEM		LEM 1-6 (31-36)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK NOT SCRAP REQD

	APPROVED BY	DATE
		9-1-66
	LBY	9/14
SUPPORT		9/19/66
RELIAB. GROUP		
GROUP LEADER		9/14
STRESS GROUP	CMW	9-2-66
LIAISON ENGRG	CAW	9-2-66
PROJ ENGRG	RMC	9-13
	AC	9-9-66

PRIORITY C2
DRAWING TITLE SEE DRAWING
DRAWING NO. LEO-280
EO NO. 258

ISSUED BY LIAISON: G. MARTELL x3604 / HENTON SECTION VEH DES INT GROUP NO. 335 PL 3

01 NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28227	LEM-6(36)	2EA
↑	↑	LEM-5(35)	↑
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
↓	↓	LEM-1(31)	↓
LEM	LDW280-28227	LTA-8(18)	2EA
PART NO. LDW280-10853-11-13		GAEC SCH NO. 30-	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL^e INFO			
LAST DASH NO. USED	-13	PRIM NO.	LE(001)		
		215	MP12		RS 4-2

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM
DOCUMENTATION TYPE II

DRAWN BY	A BISHOP 3-5-66	RELIABILITY	
LAYOUT BY	G HERREL		
CHECKED BY	J Kartzman 3-21-66		
GR LEADER	Hent 4/7/66		
VEH DES INT	4/7		
STRUCTURES	JV 4/12	PROJ ENGR	J Alber 4-13
STRUCTURES	Hilderman 4/12	REL GROUP	G. Casmanie 4-16-66
WEIGHTS	Lamonte 4-13		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TUBE
LEFT HAND-UPPER-ASCENT STAGE
MID-SECTION-THERMAL

SIZE	CODE IDENT NO.	
B	26512	LDW280-10853
SCALE	NONE	SHEET 1.00 OF 3

ENG 77.1 9-64

01

NAS 9-1100

								LDW280-10853-13	E	TUBE	AL ALY TUB.	SEE NOTES 2&3	2219	.750 OD ×.040 × $16\frac{7}{8}$	CM&T62	76	FP
								LDW280-10853-11	E	TUBE	AL ALY TUB.	SEE NOTES 2&3	2219	.750 OD ×.040 × $14\frac{5}{8}$	CM&T62	76	FP
QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	~~ZONE~~

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						CM	CHEM-MILL	LSP14-26100
						T62	HEAT TREAT	MIL-H-6088
						76	ALODINE	LSP14-9010
						FP	ZYGLO	MIL-I-6866

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10853

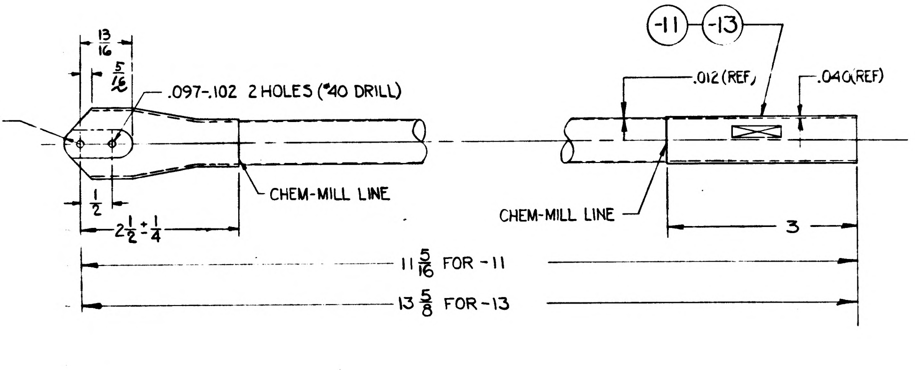
SCALE NONE

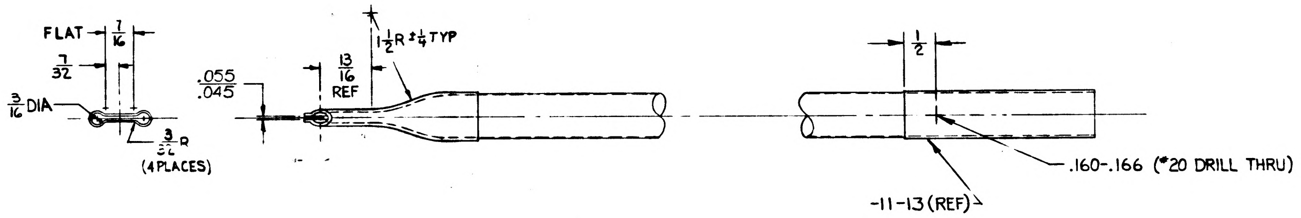
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100





NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS
2. MATERIAL SHALL MEET MIL-A-8920 FOR CHEMICAL COMPOSITION AND WWT 700 C FOR TOLERANCE AND TENSILE TESTING ONLY.
3. MATERIAL 2219-T62 AL ALLOY DRAWN TUBE CHEMICAL COMPOSITION PER MIL-A-8920 WITH PROPERTIES AS FOLLOWS:
   - LONGITUDINAL F_{tu} 54,000 PSI MIN
   - LONGITUDINAL F_{ty} 36,000 PSI MIN
   - ELONGATION 6% MIN
4. FLATTEN TUBING IN ANNEALED CONDITION.

LDW 280-10853-11,-13

CHEM-MILL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
1	.012 $^{+.003}_{-.001}$	.028 (REF)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK
MODEL OR END ITEM: LEM
SIZE: D
CODE IDENT NO.: 26512
LDW280-10853
SCALE: FULL
SHEET: 3.00

01

H G.

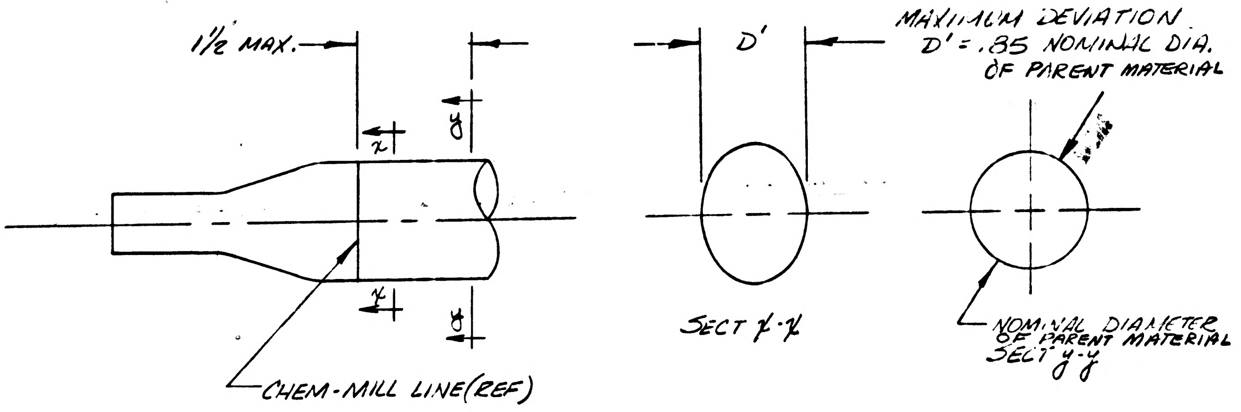
ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280		EO NO. 258
CONTROL INFO NO. LEM-2-2704		

IN F/D ADD NOTE *

AT THE LUG END OF FORMED TUBES, THE FOLLOWING DEVIATIONS ARE PERMISSIBLE.


1½ MAX.
x
y
CHEM-MILL LINE(REF)
D'
SECT X-X
MAXIMUM DEVIATION
D' = .85 NOMINAL DIA.
OF PARENT MATERIAL
NOMINAL DIAMETER
OF PARENT MATERIAL
SECT Y-Y

DRAWING	CHANGE NO
LDW280-10661	B2
-10670	A3
-10851	A1
-10852	B1
-10853	A1
-10857	B1
-10858	B1
-10859	C1
-10860	B1
-10861	B1
LDW280-10864	B1

* NEXT AVAILABLE NOTE

2

DETAIL SPEC REQ ☐	CL II ENGRG CHG ☐	CL I ENGRG CHG ☐

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
EASE OF MANUFACTURING	IN F/D ADDED NOTE *.	LE

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
		LTA-8 (18)	
LEM		LEM 1-6 (31-36)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG	RECORD EO	REWORK	SCRAP
✓		NOT	REQD

APPROVED BY		LBG			CMW	CAW	RMC	AC
DATE	9/1	9/19/66		9/1	9-2-66	9-2-66	9-13	9-7-66
9-1-66		SUPPORT WIS	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C2	SEE DRAWING	LEO - 280	258

ISSUED BY LIAISON: G. MARTELL X3004 / HEATON SECTION VEH DES INT GROUP NO. 335 PL. 3

01
NAS 9-1100

LDW280-10855

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28228	LEM-6(36)	4
		LEM-5(35)	4
		LEM-4(34)	4
		LEM-3(33)	4
		LEM-2(32)	4
		LEM-1(31)	4
	LDW280-28228	LTA-8(18)	4
	LDW280-28227	LEM-6(36)	4
		LEM-5(35)	4
		LEM-4(34)	4
		LEM-3(33)	4
		LEM-2(32)	4
		LEM-1(31)	4
LEM	LDW280-28227	LTA-8(18)	4
PART NO. LDW280-10855-9		GAEC SCH NO. 30-	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28228	LEM-6(36)	1 EA
		LEM-5(35)	1 EA
		LEM-4(36)	1 EA
		LEM-3(33)	1 EA
		LEM-2(32)	1 EA
		LEM-1(31)	1 EA
	LDW280-28228	LTA-8(18)	1 EA
	LDW280-28227	LEM-6(36)	1 EA
		LEM-5(35)	1 EA
		LEM-4(34)	1 EA
		LEM-3(33)	1 EA
		LEM-2(32)	1 EA
		LEM-1(31)	1 EA
LEM	LDW280-28227	LTA-8(18)	1 EA
PART NO. LDW280-10855-1-3-5 & -7		GAEC SCH NO. 30-	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28227	LEM-6(36)	1 EA
		LEM-5(35)	1 EA
		LEM-4(34)	1 EA
		LEM-3(33)	1 EA
		LEM-2(32)	1 EA
		LEM-1(31)	1 EA
LEM	LDW280-28227	LTA-8(18)	1 EA
PART NO. LDW280-10855-11 & -13		GAEC SCH NO. 30-	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO			
LAST DASH NO. USED	-13	PRIM NO. 215	VG(001) MP/12		R 4-14

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	HERB. SCHWETER 4/1/66	RELIABILITY	
LAYOUT BY	J. CALIGIURI		
CHECKED BY	4-11-66		
GR LEADER	4/13		
VEH DES INT	4/13		
STRUCTURES	4/13	PROJ ENGR	4-19
STRUCTURES	Hilderman 4-14	REL GROUP	G. Caramanico 4-26
WEIGHTS	4/18		

②
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

GUSSET
ASCENT STAGE - MID SECT. FUEL TANK
SHIELDING

SIZE B
CODE IDENT NO. 26512
LDW280-10855
SCALE NONE
SHEET 1.00 OF 3

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10855-13	E	GUSSET	AL ALY SH	MIL-A-8920	2219-T81	.063 × 1 3/4 × 2 5/8	NONE	88	
		-11						.063 × 1 3/4 × 2 5/8			
		-9						.063 × 1 1/4 × 1 3/4			
		-7						.063 × 2 3/8 × 2 1/2			
		-5						.063 × 2 1/8 × 2 1/2			
		-3						.063 × 1 1/2 × 2 5/8			
		LDW280-10855-1	E	GUSSET	AL ALY SH	MIL-A-8920	2219-T81	.063 × 1 7/8 × 1 7/8	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10855

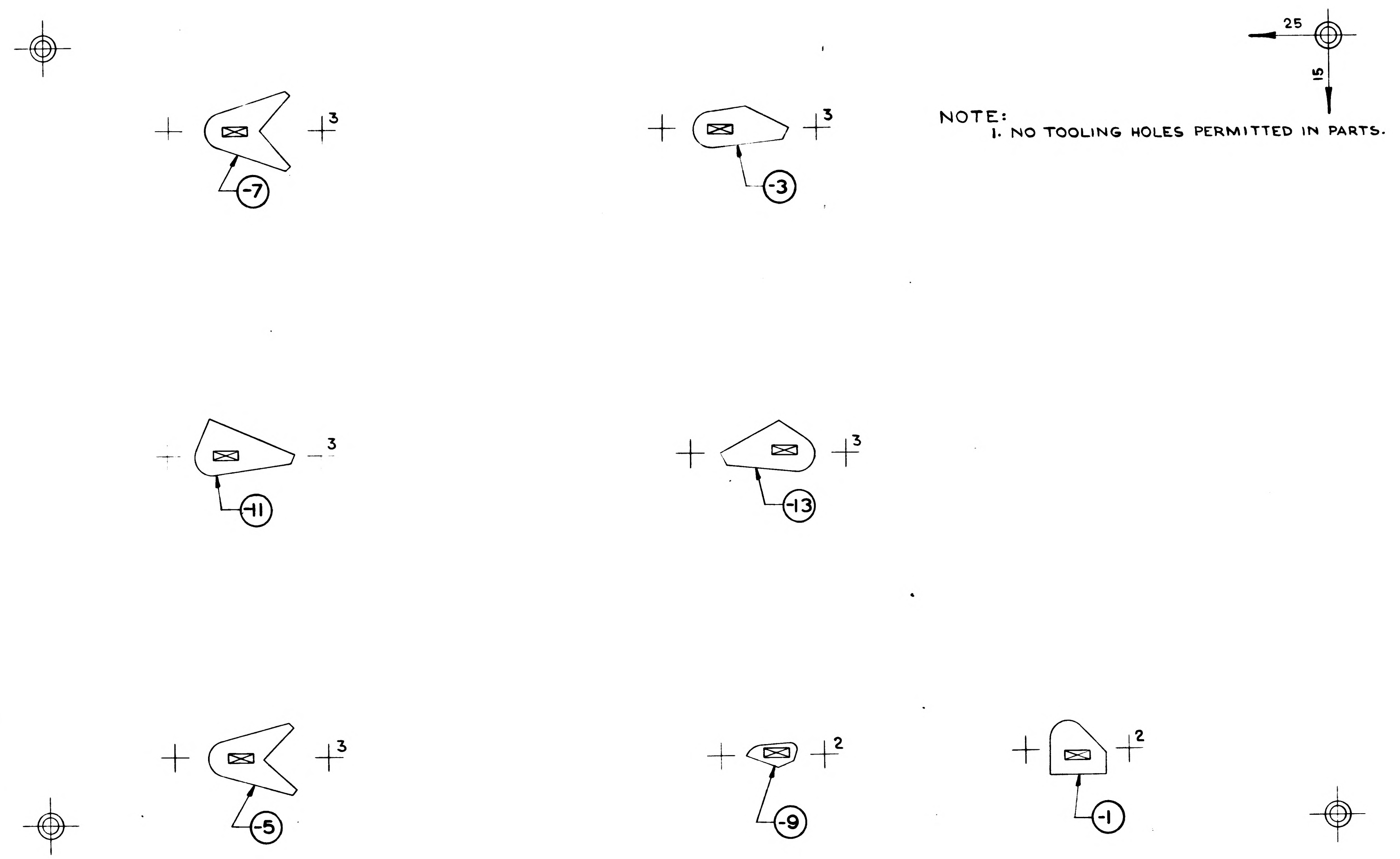
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN. NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
LEM	SIZE D	CODE IDENT NO. 26512	LDW280-10855	
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

LDW280-10856 A

PART NO. LDW280-10856-15

		MODULE OR SER NO.	REQD PER MODULE
LEM	LDW280-28226	LEM-6(36)	1
		LEM-5(35)	1
		LEM-4(34)	1
		LEM-3(33)	1
		LEM-2(32)	1
		LEM-1(31)	1
LEM	LDW280-28226	LTA-8(18)	1

PART NO. LDW280-10856-17

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28226	LEM-6(36)	3
		LEM-5 (35	3
		LEM-4(34	3
		LEM-3(33)	3
		LEM-2(32)	3
		LEM-1 (31)	3
LEM	LDW280-28226	LTA-8 (18)	3

GAEC SCH NO.

PART NO. LDW280-10856-11

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28226	LEM-6(36)	4
		LEM-5 (35)	4
		LEM-4 (34)	4
		LEM-3 (35)	4
		LEM-2 (32)	4
		LEM-1 (31)	4
LEM	LDW280-28226	LTA-8 (18)	4

GAEC SCH NO.

PART NO. LDW280-10856-21

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28231	LEM-6(36)	1
		LEM-5(35)	1
		LEM-4(34)	1
		LEM-3(33)	1
		LEM-2(32)	1
		LEM-1(31)	1
	LDW280-28231	LTA-8(18)	1
	LDW280-28226	LEM-6 (36)	1
		LEM-5 (35)	1
		LEM-4 (34)	1
		LEM-3 (33)	1
		LEM-2 (32)	1
		LEM-1 (31)	1
LEM	LDW280-28226	LTA-8 (13)	1

GAEC SCH NO. 30

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00			
REV	A	A	A		A			
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED

LAST DASH NO. USED -21

GRUMMAN REL INFO A

PRIM NO.	LE(001)	
215	MP-A	9-16-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ± 1/32 ± .020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY	E.ERICKSON 3-30-66	RELIABILITY	
LAYOUT BY	J.A.CALIGIURI		
CHECKED BY	4-7-66		
GR LEADER	Platt 4/9		
VEH DES INT	4/9		
STRUCTURE	4/	PROJ ENGR	4-13-66
STRUCTURE	Hilderman 4/12	REL GROUP	Botti 4-15-66
WEIGHTS	Lamont 4-13		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TUBE
ASCENT STAGE-MID SECT-SHIELDING-PROP TANK-L.H.

SIZE	CODE IDENT NO.		
B	26512	LDW280-10856	A

SCALE NONE

SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
A	1	1.00 1.10 2.00 3.00							SH 1.00 OF 4 WAS 1.00 OF 3 IN FLD, B/M & MOD BLK REMOVED -19 ADDED -21, NOTE 6 & ZYGLO INSP.	NOTED		-19	HERB. SCHWEIER 6-30-66		
	2	1.00 1.10 3.00						©	ON -21 .022 (REF) WAS .015 (REF) & ADDED N/A LDW280-28231.	LTA-8, LEM -1 THRU-6	✓		JAEGGI 8-3-66	RMC ©	

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10856	A
SCALE NONE			SHEET 1.10

ENG 77.3 5-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10856-21	E	TUBE	AL ALLOY TUBE	SEE NOTES 2&4	2219	1.000 x .040 x 19 1/4	CM&T62	76	FP
		-17	E	↕	↕	2&3	2219-T81	.750 x .040 x 25 1/2	CM	76	FP
		-15	E	↕	↕	2&3	2219-T81	.750 x .040 x 8 3/8	NONE	76	FP
		LDW280-10856-11	E	TUBE	AL ALLOY TUBE	SEE NOTES 2&3	2219-T81	1.000 x .040 x 28	CM	76	FP

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						CM	CHEM-MILL	LSP14-26100
						T-62	AL HEAT TREAT	MIL-H-6088
						76	ALODINE	LPS14-9010
						FP	ZYGLO	MIL-I-6866

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

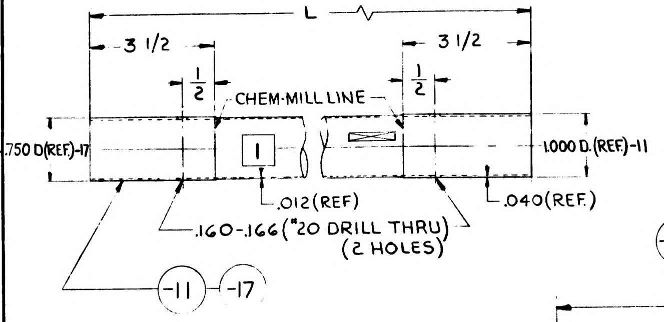
SIZE B
CODE IDENT NO. 26512
LDW280-10856
A

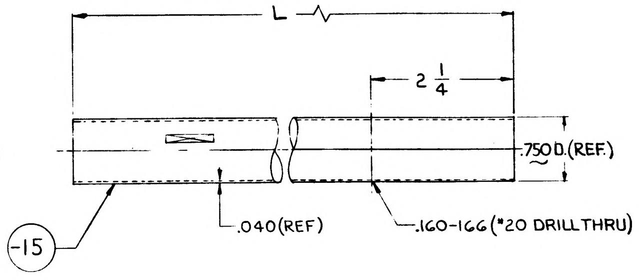
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

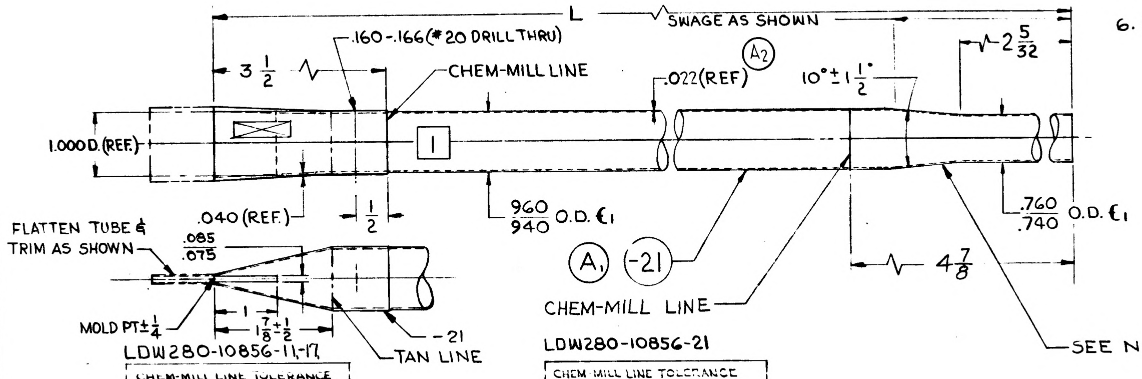
NAS 9-1100


L
3 1/2
1/2
CHEM-MILL LINE
3 1/2
1/2
.750 D(REF.)-17
1.000 D.(REF.)-11
1
.012(REF)
.040(REF.)
.160-.166(#20 DRILL THRU)
(2 HOLES)
-11
-17


L
2 1/4
.750 D.(REF.)
.040(REF)
.160-.166(#20 DRILL THRU)
-15

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. ✓ MATERIAL SHALL MEET MIL-A-8920 FOR CHEMICAL COMPOSITION AND WWT 700 C FOR TOLERANCE AND TENSILE TESTING ONLY.
3. MATERIAL 2219-T81 AL ALLOY DRAWN TUBE CHEMICIAL COMPOSITION PER MIL-A-8920 WITH PROPERTIES AS FOLLOWS.(FOR-11-15&-17
   LONGITUDINAL Ftu 60,000 PSI MIN.
   LONGITUDINAL Fty 42,000 PSI MIN.
   ELONGATION 6% MIN.
4. ✓ MATERIAL 2219-T62 AL ALLOY DRAWN TUBE CHEMICIAL COMPOSITION PER MIL-A-8920 WITH PROPERTIES AS FOLLOWS (FOR-19.)
   LONGITUDINAL Ftu 54000 PSI MIN
   LONGITUDINAL Fty 36000 PSI MIN
   ELONGATION 6% MIN.
5. SWAGE PER LSP-14-15500 USING CRITERIA FOR-2024 MATERIAL.
6. SWAGE PRIOR TO CHEM MILL.


L
SWAGE AS SHOWN
3 1/2
.160-.166(#20 DRILL THRU)
CHEM-MILL LINE
.022(REF)
A2
10° ± 1 1/2°
2 5/32
1.000 D.(REF.)
1
.040(REF.)
1/2
.960/.940 O.D. €1
.760/.740 O.D. €1
A1
-21
4 7/8
CHEM-MILL LINE
SEE NOTE 6
FLATTEN TUBE & TRIM AS SHOWN
.085/.075
MOLD PT ± 1/4
1
1 7/8 ± 1/2
-21
TAN LINE

TABLE

PART NO.	"L" DIM
LDW280-10856-11	25
-15	5 5/16
-17	22 1/2
LDW280-10856-21	16 5/32

LDW280-10856-11,-17

CHEM-MILL LINE TOLERANCE
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	.012 +003 -001	.028(REF)

LDW280-10856-21

CHEM-MILL LINE TOLERANCE
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040.

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	.022 +.003 -.001	.018(REF.)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED €1 MUST BE CONCENTRIC WITHIN FULL INDICATOR READING € =.020	✓
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-10856	A

SCALE
SHEET 3.00

LDW280-10856 A

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG NO LDW280-10856 | EO NO. B2

CONTROL INFO NO. LDW 280-A-0604

IN FIELD OF DWG, TABLES, NOTES B/M & MODEL BLOCK REMOVE CHEM-MILLED TUBES INDICATED(*) AND ADD TUBES INDICATED (**), IDENTICAL TO REMOVED TUBES, EXCEPT FOR OMISSION OF CHEM-MILLING AND #20 LINE DRILL HOLES. REVISE MODEL BLOCK REMOVING LEM-3 THRU LEM-6 REQUIREMENTS FOR ALL PARTS.

** ADD PART (NO CHEM MILL)	* REMOVE PART (CHEM-MILLED)	REVISE MODEL BLOCK TO READ				*** MODEL BLOCK WAS			
		PART NO.	NEXT ASSY	MODULE	REQD PER MODULE	PART NO	NEXT ASSY	MODULE	REQD PER MODULE
-23	-21	LDW 280-10856-23	LDW280-28226 LDW280-28231	LTA-8(18) LEM-1(31) LEM-2(32)	1 1	LDW280-10856-21	LDW280-28226 -28231	LTA-8(18) LEM-1(31) LEM-2(32) LEM-3(33) LEM-4(34) LEM-5(35) LEM-6(36)	1 1
		LDW280-10856-11	LDW280-28226		4	LDW280-10856-11	LDW280-28226		4
		LDW 280-10856-15	LDW280-28226		1	LDW280-10856-15	LDW280-28226		1
		LDW280-10856-17	LDW280-28226		3	LDW280-10856-17	LDW280-28226		3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

3

REASON FOR EO: TO EXPEDITE MANUFACTURE

DESCRIPTION OF EO: REMOVED PARTS INDICATED * & ADDED PARTS INDICATED ** IDENTICAL TO REMOVED PARTS EXCEPT FOR OMISSION OF CHEM MILL & #20 HOLES. IN MODEL BLOCK RESTRICTED EFF. ALL PARTS LTA-8, LEM-1 & LEM-2 WAS ***

GAEC & EO RELEASE: LE 9-23

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO
LEM		NOTED ABOVE	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK SCRAP ✓

APPROVED BY								RMC (WR)	
DATE	9/21	10-4		9/21	9/21			9-23-66	9-22-66
9/21/66	VDI	~~SUPPORT~~	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG		PROJ ENGRG	GOVT

PRIORITY: C

DRAWING TITLE: TUBE-ASCENT STAGE MID SECTION PROP. TANK SHIELDING-LEFT HAND

DRAWING NO. LDW 280-10856

EO NO. B2

ISSUED BY J. BENTLEY /P. HENTON X1153 SECTION VEH. DES. INT. GROUP NO. 335 PL 35

EMF

01

NAS 9-1100

LDW280-10857 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28226	LEM-2(32)	2
LEM	LDW280-28226	LEM-1(31)	2
LEM	LDW280-28226	LTA-8(18)	2
PART NO. LDW280-10857-19		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28226	LEM-2(32)	1EA
LEM	LDW280-28226	LEM-1(31)	1EA
LEM	LDW280-28226	LTA-8(18)	1EA
PART NO. LDW280-10857-11,-13,-17,-25 & -27		GAEC SCH NO. 30	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	B	B	B	B

LAST SECT LTR USED

LAST DASH NO. USED -27

GRUMMAN REL INFO B
PRIM NO. 215 UK(001) ME-38 11/25/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM * 1
DOCUMENTATION TYPE II

DRAWN BY F.HIPPLER 4-1-66
RELIABILITY
LAYOUT BY J.A.GALIGIURI
CHECKED BY M 4·5·66
GR.LEADER P. Hart 4-9
VEH.DES.INT. 4/9
STRUCTURE 4/12
STRUCTURE Hildersman 4/12
WEIGHTS Lamonte 4-13
PROJ ENGR 4-13-66
REL GROUP Botts 4-15-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TUBE
ASCENT STAGE-MID SECTION-SHIELDING FRAME
PROP TANK-LEFT HAND

SIZE B
CODE IDENT NO. 26512
LDW280-10857 B
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00 1.10 2.00 3.00						Ⓡ	SH 1.00 OF 4 WAS SH 1.00 OF 3 IN F/D, B/M & M/B REMOVED -15 ADDED -21 & -23. IN PROCESS BOX "T62" WAS "T81". IN NOTE 3 MTL 2219-T62 WAS T81 AND LONGITUDINAL Ftu 54,000 WAS 60,000 Ⓐ " " Fty 36,000 WAS 42,000	NOTED	NOT	REQD	HERD SCHWEIER 6-29-66		Ⓑ
B	1	3.00						LEO-258	IN FLD. ADDED NOTE 5	LTA-8 (18) LM-1 THRU LM-6	NOT	REQD.	S. CARANO 11-18-68		
	2	3.00						LEO-270	REVISED CHEM-TOLERANCES $^{+.005}_{-.001}$ WAS $^{+.003}_{-.001}$ FOR -11, 13, -17, -19, -21 & -23.	NOT REQD.					
	3	1.00, 2.00 3.00					✓	E.O.B3	REMOVED PARTS -21 & -23 & ADDED PARTS -25 & -27 IDENTICAL TO REMOVED PARTS EXCEPT FOR OMISSION OF CHEM MILL & #20 HOLES. IN M/D RESTRICTED EFF. ALL PARTS LTA-8, LM-1 & LM-2 WAS LTA-8, LM-1 THRU LM-6	LTA-8, LM-1, THRU LM-6		-21, -23			
	4	3.00						E.O.B4	IN FLD. REWORED -25.	LTA-8 LM-1 & 2	✓				
	5	1.00					✓	E.O.B5 Ⓡ	REF. E.O.B3 FOR -19 REMOVED LM-3 THRU LM-6 REQTS.	LM-3 THRU LM-6		-19		BC	

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10857	B Ⓑ
SCALE NONE			SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10857-27	E	TUBE	AL ALLOY TUBE	SEE NOTES 2&3	2219	.750 O.D.×.040×26	T62 FP	76	
		-25						.750 O.D.×.040×34¼	T62 FP		
		-19						1.000 O.D×.040×27 21/32	CM,T62,FP		
		-17						.750 O.D×.040×33 29/32			
		-13						.750 O.D.×.040×39 9/16			
		LDW280-10857-11	E	TUBE	AL ALLOY TUBE	SEE NOTES 2&3	2219		CM,T62,FP	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
CM	CHEM-MILLING	LSP 14-26100
T62	HEAT TREAT	MIL-H-6088
76	ALODINE	LSP 14-9010
FP	ZYGLO	MIL-I-6866

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10857	B Ⓑ

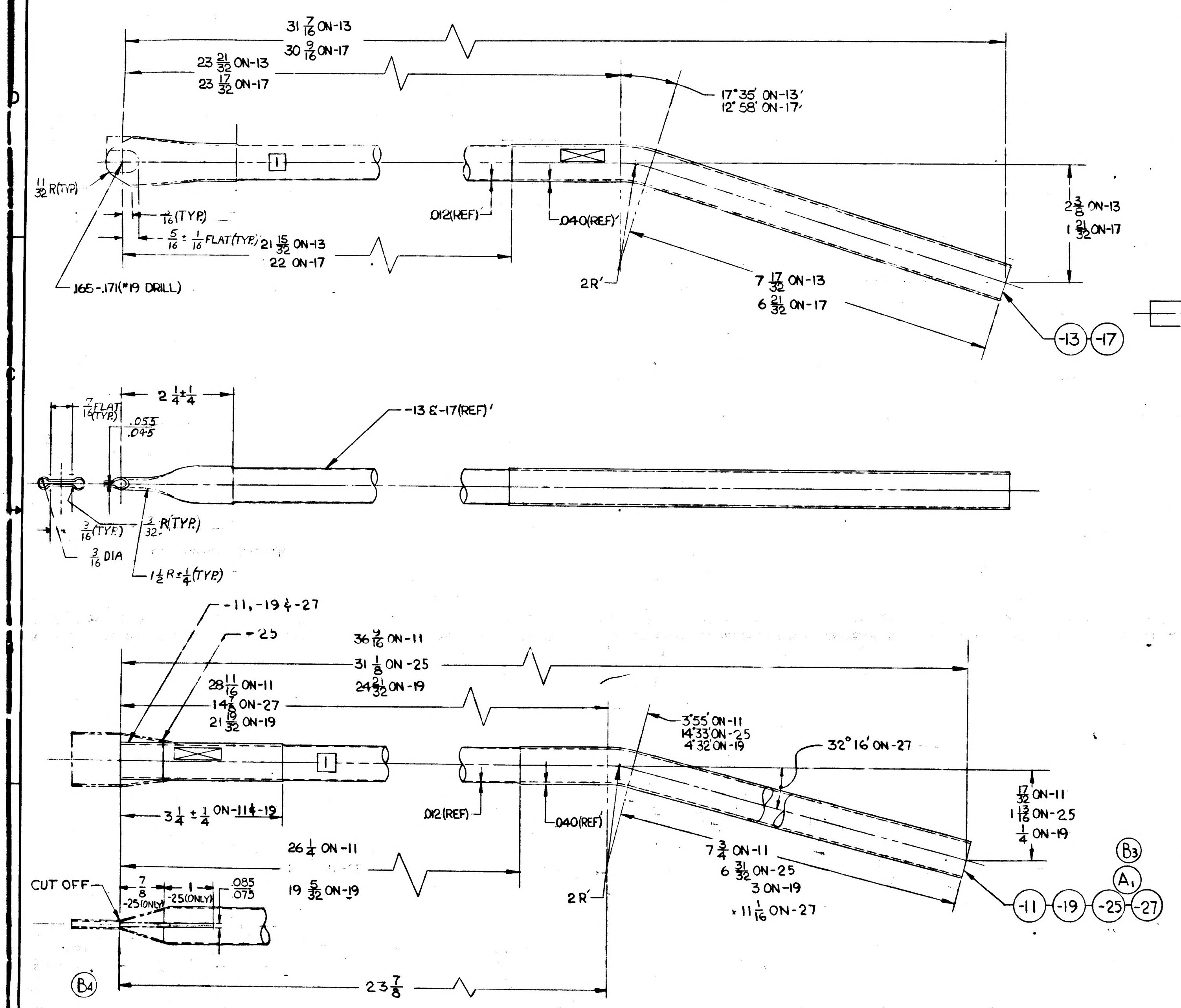
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

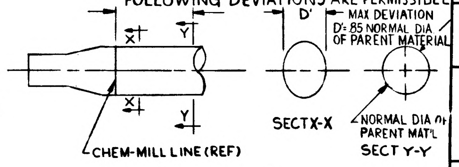

31 7/16 ON-13
30 9/16 ON-17
23 21/32 ON-13
23 17/32 ON-17
17°35' ON-13
12°58' ON-17
11/32 R (TYP)
1/16 (TYP.)
5/16 ± 1/16 FLAT (TYP.)
21 15/32 ON-13
22 ON-17
.012 (REF)
.040 (REF)
2R'
2 3/8 ON-13
1 21/32 ON-17
.165-.171 (#19 DRILL)
7 17/32 ON-13
6 21/32 ON-17
-13
-17
2 1/4 ± 1/4
7/16 FLAT (TYP)
.055
.045
-13 & -17 (REF)
3/16 (TYP.)
3/32 R (TYP.)
3/16 DIA
1 1/2 R ± 1/4 (TYP.)
-11, -19 & -27
-25
36 9/16 ON-11
31 1/8 ON-25
24 21/32 ON-19
28 11/16 ON-11
14 7/8 ON-27
21 19/32 ON-19
3°55' ON-11
14°33' ON-25
4°32' ON-19
32°16' ON-27
3 1/4 ± 1/4 ON-11 & -19
.012 (REF)
.040 (REF)
17/32 ON-11
1 13/16 ON-25
1/4 ON-19
26 1/4 ON-11
19 5/32 ON-19
7 3/4 ON-11
6 31/32 ON-25
3 ON-19
11 1/16 ON-27
2R'
CUT OFF
7/8 -25 (ONLY)
1 -25 (ONLY)
.085
.075
B3
A1
-11
-19
-25
-27
B4
23 7/8

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. MATERIAL SHALL MEET MIL-A-8920 FOR CHEMICAL COMPOSITION AND WW-T-700C FOR TOLERANCE AND TENSILE TESTING ONLY.
3. MATERIAL 2219-T62 AL ALLOY DRAWN TUBE CHEMICAL COMPOSITION PER MIL-A-8920 WITH PROPERTIES AS FOLLOWS:

LONGITUDINAL Ftu 54,000 PSI MIN
LONGITUDINAL Fty 36,000 PSI MIN
ELONGATION 6% MIN

4. FLATTEN TUBE END PER DWG IN ANNEALED CONDITION.
5. AT THE LUG END OF FORMED TUBES, THE FOLLOWING DEVIATIONS ARE PERMISSIBLE


X
Y
D'
MAX DEVIATION
D' = .85 NORMAL DIA OF PARENT MATERIAL
CHEM-MILL LINE (REF)
SECT X-X
NORMAL DIA OF PARENT MAT'L
SECT Y-Y

LDW280-10857-11,-13,-17,-19, (B3) (B2)

CHEM-MILL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
1	.012 + .005 − .001	.028 (REF)

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
LEM	SIZE D	CODE IDENT NO. 26512	LDW280-10857	B
MODEL OR END ITEM	SCALE NONE		SHEET 3.00	

LDW280-10857B

ENG 73-3 6-64

01

NAS 9-1100

LDW280-10858 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28226	LEM-6 (36)	1 EA
↕	↕	LEM-5 (35)	↕
↕	↕	LEM-4 (34)	↕
↕	↕	LEM-3 (33)	↕
↕	↕	LEM-2 (32)	↕
↕	↕	LEM-1 (31)	↕
LEM	LDW280-28226	LIA-8 (18)	1 EA

PART NO. LDW280-10858-11, -13, -15, -17, -19, -21, -25 & -27

GAEC SCH NO. 30

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-27

GRUMMAN REL INFO A

PRIM NO.	UE (001)		
215	MP-A	9.13.6	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	A.STERNBERG 3-31-66	RELIABILITY	
LAYOUT BY	CALIGIURI		
CHECKED BY	4-4-66		
GR.LEADER	4/9		
VEH.DES.INT	4/9		
STRUCTURE	4/12	PROJ ENGR	4-13-66
STRUCTURE	Hilderman 4/1V	REL GROUP	Bolt 4-15-66
WEIGHTS	Lamont 4-12		

Ⓡ GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TUBE
ASCENT STAGE-MID SECT-SHIELDING-
PROP TANK-L.H.

SIZE B
CODE IDENT NO. 26512
LDW280-10858 A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	~~ZONE~~
		LDW280-10858-27	E	TUBE	AL ALLOY TUBE	SEE NOTE 2&3	2219	.750 O.D.X.040X23	CM&T62	76	
		-25						1.000 O.D.x.040x23 21/32			FP
		-21						.750 O.D.x.040x34 21/32			FP
		-19						.750 O.D.x.040x31 3/8			FP
		-17						.750 O.D.x.040x40 15/32			FP
		-15						.750 O.D.x.040x33 7/8			FP
		-13						.750 O.D.x.040x23 11/32			FP
		LDW280-10858-11	E	TUBE	AL ALLOY TUBE	SEE NOTE 2&3.	2219	.750 O.D.x.040x40 13/16	CM&T62	76	FP

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
CM	CHEM-MILLING	LSP-14-26100
T62	AL HEAT TREAT	MIL-A-8920
76	ALODINE	LSP14-9010
FP	ZYGLO	MIL-I-6866

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

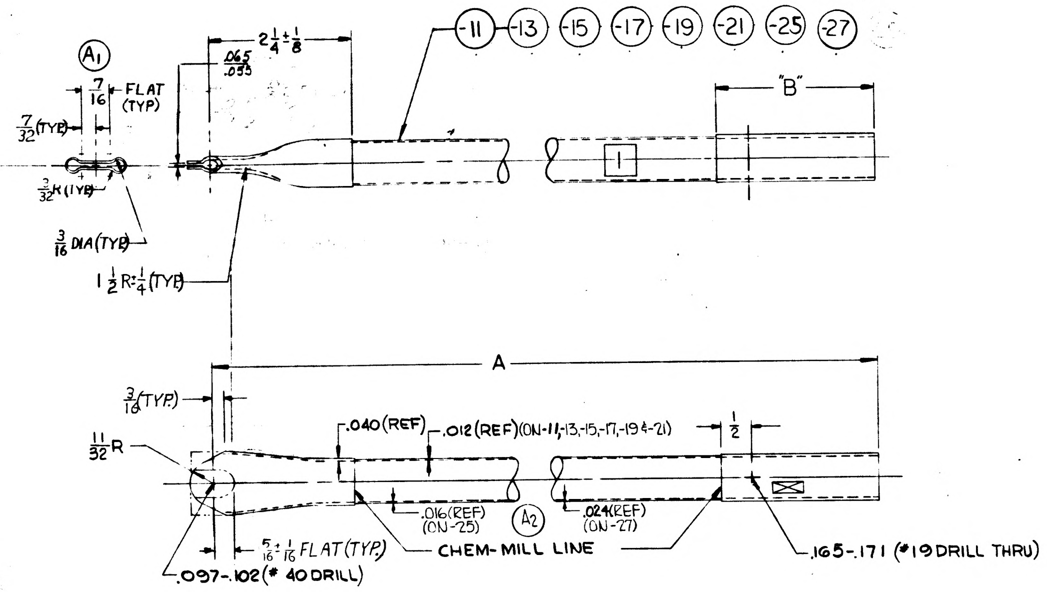
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10858	A
SCALE NONE		SHEET 2 OO	

ENG 77.2 7-65

01

NAS 9-1100



NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. MATERIAL SHALL MEET MIL-A-8920 FOR CHEMICAL COMPOSITION AND WWT 700C FOR TOLERANCE AND TENSILE TESTING ONLY.
3. MATERIAL 2219-T62 AL ALLOY DRAWN TUBE CHEMICAL COMPOSITION PER MIL-A-8920 WITH PROPERTIES AS FOLLOWS:
   - LONGITUDINAL Ftu 54,000 PSI MIN
   - LONGITUDINAL Fty 36,000 PSI MIN
   - ELONGATION 6% MIN
4. FLATTEN TUBE END PER DWG IN ANNEALED CONDITION

PART NO.	"A"	"B"
LDW280-10858 -11	36 15/32	3.00
LDW280-10858 -13	20 —	4 3/4
-15	30 17/32	3 1/2
-17	37 1/8	3 5/8
-19	28 1/32	5.00
-21	31 5/16	2 3/4
-25	20 5/8	3 5/8
LDW280-10858 -27	19 25/32	4

A1

A2

LDW280-10858-25

CHEM-MILL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
1	.016 +.003 −.001	.024 (REF)

A2

LDW280-10858-27

CHEM-MILL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM MILLING	DEPTH OF CUT
1	.035 +.003 −.001	.005 (REF)

A1

LDW280-10858-11-13-15-17-19-21

CHEM-MILL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
1	.012 +.003 −.001	.028 (REF)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER SAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
	SIZE D	CODE IDENT NO. 26512	LDW280-10858	A
LEM				
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

01 NAS 9-1100

HG.

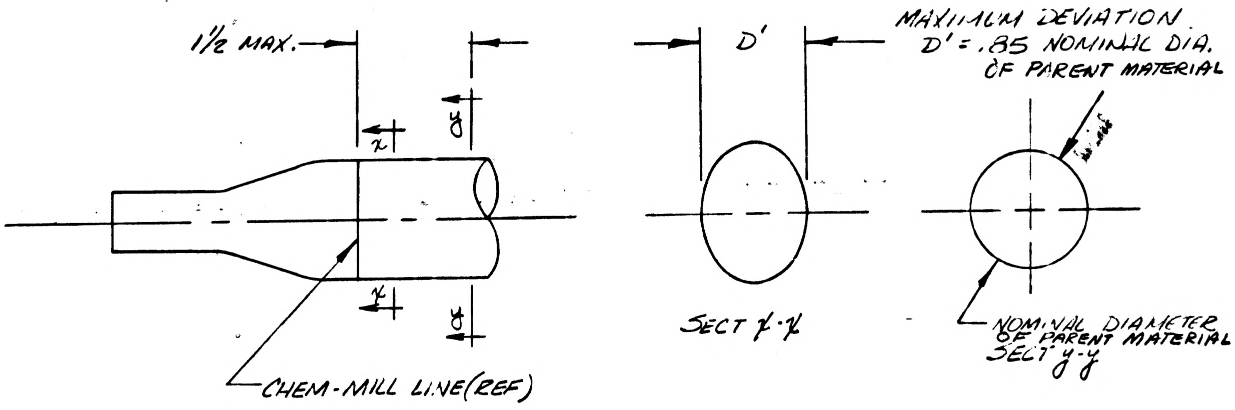
ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280		EO NO. 258	
CONTROL INFO NO. LEM-2-2704			

IN F/D ADD NOTE *

AT THE LUG END OF FORMED TUBES, THE FOLLOWING DEVIATIONS ARE PERMISSIBLE.



1/2 MAX.
x
x
y
y
D'
MAXIMUM DEVIATION D' = .85 NOMINAL DIA. OF PARENT MATERIAL
SECT x-x
NOMINAL DIAMETER OF PARENT MATERIAL SECT y-y
CHEM-MILL LINE (REF)

DRAWING	CHANGE NO
✓ LDW280-10661	B2
✓ -10670	A3
✓ -10851	A1
✓ -10852	B1
✓ -10853	A1
✓ -10857	B1
✓ -10858	B1
-10859	C1
-10860	B1
-10861	B1
LDW280-10864	B1

* NEXT AVAILABLE NOTE

2

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☐

REASON FOR EO: EASE OF MANUFACTURING

DESCRIPTION OF EO: IN F/D ADDED NOTE *.

GAEC EO RELEASE: LE

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
		LTA-8 (18)	
LEM		LEM 1-6 (1-36)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓		NOT	REQD
REVISE DWG	RECORD EO	REWORK	SCRAP

APPROVED BY		LBey				caw	RMC	AC
DATE	9/1	9/19/66		9/1	9-2-66	9-2-66	9-13	9-9-66
9-1-66		~~SUPPORT~~ WIS	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: C_2

DRAWING TITLE: SEE DRAWING

DRAWING NO.: LEO-280

EO NO.: 258

ISSUED BY LIAISON: G. MARTELL X3604 / HENTON SECTION VEH DES INT GROUP NO. 335 PL 3

01
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO 26512
ENGINEERING ORDER

ENG 321 REV 3 65

*

DWG NO. LDW280-10858 | EO NO. B3
CONTROL INFO NO. LDW 280-A-0606

IN FIELD OF DWG, TABLES, NOTES, B/M & MODEL BLOCK REMOVE CHEM-MILLED TUBES INDICATED (*) AND ADD TUBES INDICATED (**), IDENTICAL TO REMOVED TUBES, EXCEPT FOR OMISSION OF CHEM-MILLING AND #20 LINE DRILL HOLES. REVISE MODEL BLOCK REMOVING LEM-3 THRU LEM-6 REQUIREMENTS FOR ALL PARTS.

**	*	REVISE MODEL BLOCK TO READ				*** MODEL BLOCK WAS			
ADD PART (NO CHEM-MILL)	REMOVE PART (CHEM-MILLED)	PART NO.	NEXT ASSY	MODULE	REQD PER MODULE	PART NO	NEXT ASSY	MODULE	REQD PER MODULE
-29 -31	-25 -27	LDW280-10858 -11, -13, -15, -17, -19, -21, -29 & -31	LDW280-28226	LTA-8(18) LEM-1(31) LEM-2(32)	1 EA.	LDW280-10858 -11, -13, -15, -17, -19, -21, -25 & -27	LDW280-28226	LTA-8(18) LEM-1(31) LEM-2(32) LEM-3(33) LEM-4(34) LEM-5(35) LEM-6(36)	1 EA.

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐ 3

REASON FOR EO: TO EXPEDITE MANUFACTURE

DESCRIPTION OF EO: REMOVED PARTS INDICATED * & ADDED PARTS INDICATED ** IDENTICAL TO REMOVED PARTS EXCEPT FOR OMISSION OF CHEM MILL & #20 HOLES. IN MODEL BLOCK RESTRICTED EFF. ALL PARTS LTA-8, LEM-1 & LEM-2 WAS ***

GAEC & EO RELEASE: 66 9-23

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		NOTED	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK SCRAP ✓

APPROVED BY		DR							Bott.
DATE	9/21	10 4		9/21	9/21		9-23-66	9-22-66
9/21/66	VDI	~~SUPPORT~~ WD	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C
DRAWING TITLE: TUBE-ASCENT STAGE MID SECTION - PROP TANK SHIELDING - LEFT HAND
DRAWING NO.: LDW 280-10858
EO NO.: B3

ISSUED BY D. J. COPPI / P. HENTON X1153 SECTION VEH. DES. INT. GROUP NO. 335 PL 35 EMF

01

NAS 9-1100

ENG 32.1 REV 3-65 *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO.	LDW280-10858	EO NO.	B4
CONTROL INFO NO.	LM-3-4034		

IN F/D, B/M, M/B & TABLES REMOVE -11 AND ADD -33. -33 IDENTICAL TO -11 EXCEPT FOR OMISSION OF CHEM-MILLING & #19 DRILL HOLES.

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		3

REASON FOR EO	DESCRIPTION OF EO	GAEC C EO RELEASE
TO EXPEDITE MANUFACTURING	REMOVED -11 AND ADDED -33.	LE

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8 (18)	
LM		LM-1 (31)	
LM		LM-2 (32)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS									
✓			✓	APPROVED BY					—		
				DATE	10/12			10/12	—	10-5-66	10-6-66	10-5-66
REVISE DWG	RECORD EO	REWORK	SCRAP	10/5/66	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	TUBE ~ A/S ~ M/S ~ SHIELDING PROP. TANK ~ L. H.	LDW 280-10858	B4

ISSUED BY LIAISON / VIC BOLLO / D. COPPI 2151 SECTION VEH. DES. INT. GROUP NO. 335 PL 35 EMP

01 NAS 9-1100

LDW280-10859 C

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28226	LEM-2(32)	2
LEM	LDW280-28226	LEM-1(31)	2
LEM	LDW280-28226	LTA-8 (18)	2
PART NO. LDW280-10859-15		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28226	LEM-2 (32)	1 EA
LEM	LDW280-28226	LEM-1 (31)	1 EA
LEM	LDW280-28226	LTA-8 (18)	1 EA
PART NO. LDW280-10859-17-1,-19		GAEC SCH NO. 30	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00			
REV	C	C	C		C			
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED

LAST DASH NO. USED -19

GRUMMAN REL INFO C

PRIM NO. 215 | JK(001) ME-3C 12/11/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	P.SCHELL 4-1-66	RELIABILITY	
LAYOUT BY	J.CALIGIURI		
CHECKED BY	D.FASS 4-6-66		
GR.LEADER	Hark 4/9		
VEH.DES.INT	4/9		
STRUCTURE	JV FSS 4/12	PROJ ENGR	4-14
STRUCTURE	Hilderman 4/13	REL GROUP	E. Caramanico 4/14/66
WEIGHTS	4-14		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TUBE
ASCENT STAGE-MID SECT.-SHIELDING-
PROP TANK-L.H.

SIZE B | CODE IDENT NO. 26512 | LDW280-10859 | C

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
A	1	1.00 1.10 2.00, 3.00							SH 1.00 OF 4 WAS 1.00 OF 3. ADDED SH 1.10. REVISION "A" NOT APPICABLE.	NOTED		✓	HERB. SCHWEIER 6.30.66		
B	1	1.00, 1.10, 3.00						EO B1	ON -11, -13, -15 "2 1/8 +1/4 -0" WAS "2 1/8 ± 1/32" ON -11, "3 1/2 +1/4 -0" WAS "3 1/2 ± 1/32". ON -13 "2 +1/4 -0" WAS "2 ± 1/32."				JAEGGI 8-5-66	RMC	
	2	1.00, 1.10, 2.00, 3.00						Ⓓ	IN FLD/DWG, MOD. BLK & B/M REMOVED -11 & -13, AND ADDED -19 & -17,	NOTED		-11 -13	EG		
C	1	3.00						LEO 258	IN FLD ADDED NOTE 7	LTA-8, LM-1 THRU LM-6	NOT	REQD	S. CARANO 12-3-68		
	2	3.00						LEO 270	REVISED CHEM-TOLERANCES $^{+.005}_{-.001}$ WAS $^{+.003}_{-.001}$ FOR -15 & -17	NOT REQD					
	3	3.00 1.00, 2.00					✓	E.O.C3	CANCELLED BY EO C4	LTA-8 (18) LM-1 THRU LM-6		✓			
	4	1.00, 2.00 3.00					✓	E.O.C4	CANCELLED E.O.C3 & CREATED -21 & -23 THERE ON			-21 -23			
	5	1.00, 2.00 3.00		Ⓡ			✓	E.O.C5	(1.) REMOVED -17 & ADDED -17-1. (2.) REMOVED LM-3 THRU LM-6 EFF. FROM ALL DASH NO'S. 3.) ADDED CONST. WALL THK. -17-1 & -19, ADDED NOTE 8. (4.) CHG'D WALL THK. -19.	LTA-8 (18) LM-1 LM-2		✓	12/11/68		

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10859	C
SCALE NONE		SHEET 1.10	

©

ENG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	~~ZONE~~
		LDW280-10859-19	E	TUBE	AL ALLOY TUBE	SEE NOTE 4&5	2219	1.500 O.D.x.065x51 1/8	T62	76	FP
		LDW280-10859-17-1	E	TUBE	AL ALLOY TUBE	SEE NOTE 4&5	2219	1.500 O.D.x.040x47	T62&CM	76	FP
		LDW280-10859-15	E	TUBE	AL ALLOY TUBE	SEE NOTE 4&5	2219	1.000 O.D.x.040x27	T62&CM	76	FP

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						CM	CHEM-MILLING	LSP14-26100
						76	ALODINE	LSP14-9010
						T62	AL HEAT TREAT	MIL-H-6088
						FP	ZYGLO	MIL-I-6866

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

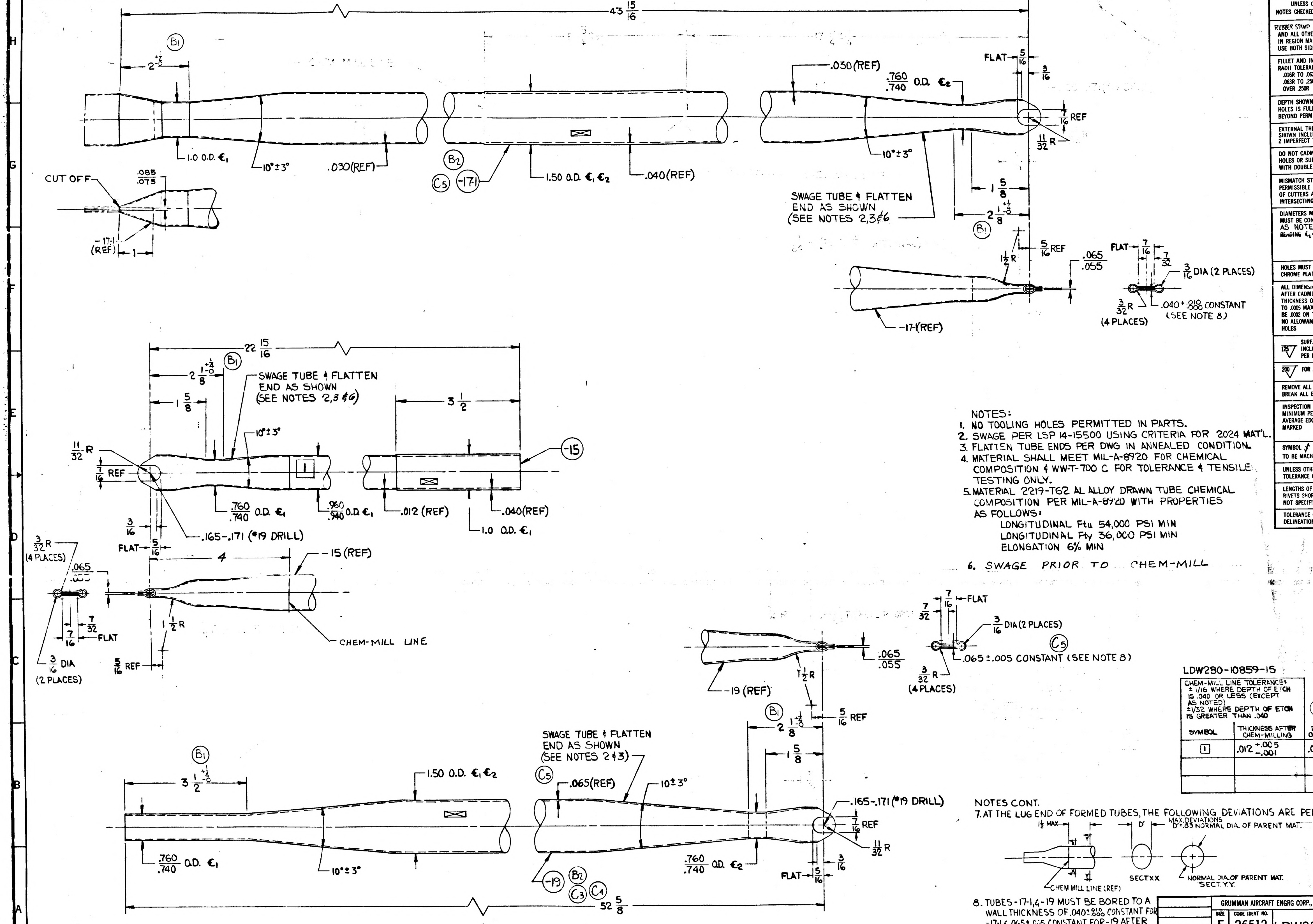
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-10859
C
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


43 15/16
2 +1/-0
B1
.030(REF)
.760/.740 O.D. €2
FLAT 5/16
3/16
7/16 REF
11/32 R
1.0 O.D. €1
10°±3°
.030(REF)
B2
C5
-17-1
1.50 O.D. €1 €2
.040(REF)
10°±3°
1 5/8
2 +1/-0 1/8
SWAGE TUBE & FLATTEN END AS SHOWN (SEE NOTES 2,3 & 6)
CUT OFF
.085/.075
-17-1 (REF)
1
5/16 REF
1 1/2 R
.065/.055
FLAT 7/16
7/32
3/16 DIA (2 PLACES)
3/32 R (4 PLACES)
.040 +.010/-.000 CONSTANT (SEE NOTE 8)
-17-1(REF)
22 15/16
2 +1/-0 1/8
B1
SWAGE TUBE & FLATTEN END AS SHOWN (SEE NOTES 2,3 & 6)
1 5/8
10°±3°
3 1/2
-15
11/32 R
7/16 REF
1
.760/.740 O.D. €1
.960/.940 O.D. €1
.012 (REF)
.040(REF)
1.0 O.D. €1
3/16
FLAT 5/16
.165-.171 (#19 DRILL)
3/32 R (4 PLACES)
.065/.055
4
-15 (REF)
1 1/2 R
7/32
7/16
FLAT
3/16 DIA (2 PLACES)
5/16 REF
CHEM-MILL LINE
7/32
7/16 FLAT
3/16 DIA (2 PLACES)
C5
.065±.005 CONSTANT (SEE NOTE 8)
3/32 R (4 PLACES)
-19 (REF)
1 1/2 R
.065/.055
5/16 REF
B1
2 +1/-0 1/8
1 5/8
SWAGE TUBE & FLATTEN END AS SHOWN (SEE NOTES 2 & 3)
C5
.065(REF)
10°±3°
.165-.171 (#19 DRILL)
7/16 REF
11/32 R
B1
3 +1/-0 1/2
1.50 O.D. €1 €2
.760/.740 O.D. €1
10°±3°
-19
B2
C3
C4
.760/.740 O.D. €2
FLAT 5/16
3/16
52 5/8

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. SWAGE PER LSP 14-15500 USING CRITERIA FOR 2024 MAT'L.
3. FLATTEN TUBE ENDS PER DWG IN ANNEALED CONDITION.
4. MATERIAL SHALL MEET MIL-A-8920 FOR CHEMICAL COMPOSITION & WW-T-700 C FOR TOLERANCE & TENSILE TESTING ONLY.
5. MATERIAL 2219-T62 AL ALLOY DRAWN TUBE CHEMICAL COMPOSITION PER MIL-A-8920 WITH PROPERTIES AS FOLLOWS:
   LONGITUDINAL Ftu 54,000 PSI MIN
   LONGITUDINAL Fty 36,000 PSI MIN
   ELONGATION 6% MIN
6. SWAGE PRIOR TO CHEM-MILL

LDW280-10859-15

CHEM-MILL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

C2

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
1	.012 +.005/-.001	.028(REF)

NOTES CONT.

7. AT THE LUG END OF FORMED TUBES, THE FOLLOWING DEVIATIONS ARE PERMISSABLE.

1 1/2 MAX
X
Y
D'
MAX. DEVIATIONS D'=.83 NORMAL DIA. OF PARENT MAT.
CHEM MILL LINE (REF)
SECT.XX
NORMAL DIA. OF PARENT MAT.
SECT.YY

8. TUBES -17-1, & -19 MUST BE BORED TO A WALL THICKNESS OF .040 +.010/-.000 CONSTANT FOR -17-1 & .065±.005 CONSTANT FOR -19, AFTER SWAGING & BEFORE FLATTENING.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED € MUST BE CONCENTRIC WITHIN AS NOTED FULL INDICATOR READING €1=.030 €2=.030	✓
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN. NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	F	26512	LDW280-10859	C
	SCALE FULL			SHEET 3.00

01

NAS 9-1100

LDW280-10860 B

PART NO LDW280-10860-45

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28878	LEM-2(32)	1
LEM	LDW280-28878	LEM-1(31)	1
LEM	LDW280-28878	LTA-8(18)	1

PART NO. LDW280-10860-41 — GAEC SCH NO. 30-

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28156	LEM-2(32)	1
LEM	LDW280-28156	LEM-1(31)	1
LEM	LDW280-28156	LTA 8(18)	1

PART NO. LDW280-10860-15,-17, -19-21,-23-25,-39 &-43 — GAEC SCH NO. 30-

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28231	LEM-2(32)	1 EA
LEM	LDW280-28231	LEM-1(31)	1 EA
LEM	LDW280-28231	LTA-8(18)	1 EA

PART NO. LDW280-10860-13 — GAEC SCH NO. 30-

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28231	LEM-2(32)	2
LEM	LDW280-28231	LEM-1(31)	2
LEM	LDW280-28231	LTA-8(18)	2

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	100	1.10	200	3.00
REV	B	B	B	B
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -45

GRUMMAN REL INFO

PRIM NO.	JK(001)
215	MP-58-6/2/7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	A.STERNBERG 3-31-66	RELIABILITY	
LAYOUT BY	J.A.CALIGIURI		
CHECKED BY	4-5-66		
GR LEADER	4/11		
VEH.DES.INT.	4/11		
STRUCTURES	4/12	PROJ ENGR	4-13-66
STRUCTURES	Hilderman 4/12	REL GROUP	4-16-66
WEIGHTS	4-13		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TUBE
ASCENT STAGE-MID SECT-PROP TANK
SHIELDING-LEFT HAND

SIZE	CODE IDENT NO.		
B	26512	LDW280-10860	B
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
A	1	1.00 1.10 2.00 3.00							SH 1.00 OF 4 WAS 1.00 OF 3. IN F/D, M/B & B/M ADDED-33. IN F/D $41\frac{47}{64}$ FOR -31 WAS $41\frac{5}{32}$. DWG ERROR CORRECTION	NOT REQD	NONE	NONE	HERB. SCHWEE- 6-30-66		
	2								IN FLD/DWG, MOD. BLK & B/M REMOVED -11 & -29 & ADDED -35 & -37 EG	LTA-8, LEM -1 THRU-6		-11 -29	JAEGGI 8-5-66		
	3								REMOVED -27. ON -31, .145/.155 WAS .055/.045 R.m			-27	RMS		
	4	1.00, 1.10						Ⓡ	ON SH 1 REMOVED LEM-3 THRU 6 FROM ALL DASH NO'S; N/A FOR -31 WAS LDW280-28156	NOTED		✓	MULLER 9/3/66 JK		
B	1	1.10, 3.00 1.00						LE0280-258	IN F/D ADDED NOTE 5	LTA-8, LM-1 THRU LM-6	NOT	REQD	C.BAIS 6-7-67		
	2	1.10, 3.00						LE0280-270	REVISED CHEM-TOLERANCES $^{+.005}_{-.001}$ WAS $^{+.003}_{-.001}$ FOR -15, -17, -19, -21, -31, -33 & -37	NOT REQD	NOT	REQD			
	3	1.00, 1.10, 2.00, 3.00					✓	EO B3	REMOVED -33, -35 & -37 AND ADDED -39, -41 & -43	LTA-8, LM-1, LM-2		-33 -35 -37			
	4	1.10, 2.00						EO B4	IN B/M PROCESS SYMBOL BLOCK FOR -23 & -25 REMOVED CM (CHEM-MILLING)		NOT	REQD			
	5	1.10, 3.00 2.00					✓	EO B5	1) ADDED VIEWS TO DEFINE END CONDITION FOR -31 & ADDED NOTE TO RESTRICT EXISTING END VIEW. 2) MATL FOR -41 2024-T3 .065 WALL (WAS 2219, .060 WALL)		✓				
	6	1.00, 1.10 2.00 3.00						EO B6	REF EO B5 ADDED -45 REMOVED -31			-31			
	7	3.00					✓	EOB7	TRIMMED -41	LM-1, LM-2	✓				
	8	1.10, 2.00							IN B/M PROCESS SYMBOL BLOCK FOR -13 REMOVED CM (CHEM-MILLING)	NOT REQD	NOT	REQD	JG		
	9							Ⓡ	REF LE0280-258 (EO B1) EFF SHOULD BE LTA-8, LM-1 & LM-2 ONLY	LTA-8 LM-1 & 2	NOT	REQD			

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10860	B ⑬
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	~~ZONE~~
		LDW280-10860-45	E	TUBE	AL ALLOY TUBE	SEE NOTES 2&3	2219	.750 O.D.X.040X46	CM&T62	NONE	FP
		-43					2219	.750OD.X040X36 1/8	T62	76	
		-41					2024-T3	.750 O.D.X.065X27 3/8	NONE	76	
		-39					2219	.750 O.D.X.040X 32 1/2	T62	76	
		-25						.750OD X040X 12 1/4	T62		
		-23						.750OD X.040X10 3/4	T62		
		-21						.750OD X.040X 18	CM&T62		
		-19						.750OD X.040 X25 7/8			
		-17						.750 O.D.X.040X17 7/8			
		-15						.750O.D.X.040X25 3/4	CM&T62		
		LDW280-10860-13	E	TUBE	AL ALLOY TUBE	SEE NOTES 2&3	2219	.750OD.X040X 4 1/4	T62	76	FP

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
CM	CHEM-MILLING	LSP14-26100
76	ALODINE	LSP14-9010
T62	AL HEAT TREAT	MIL-A-8920
FP	ZYGLO	MIL-I-6866

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10860	B ⑬

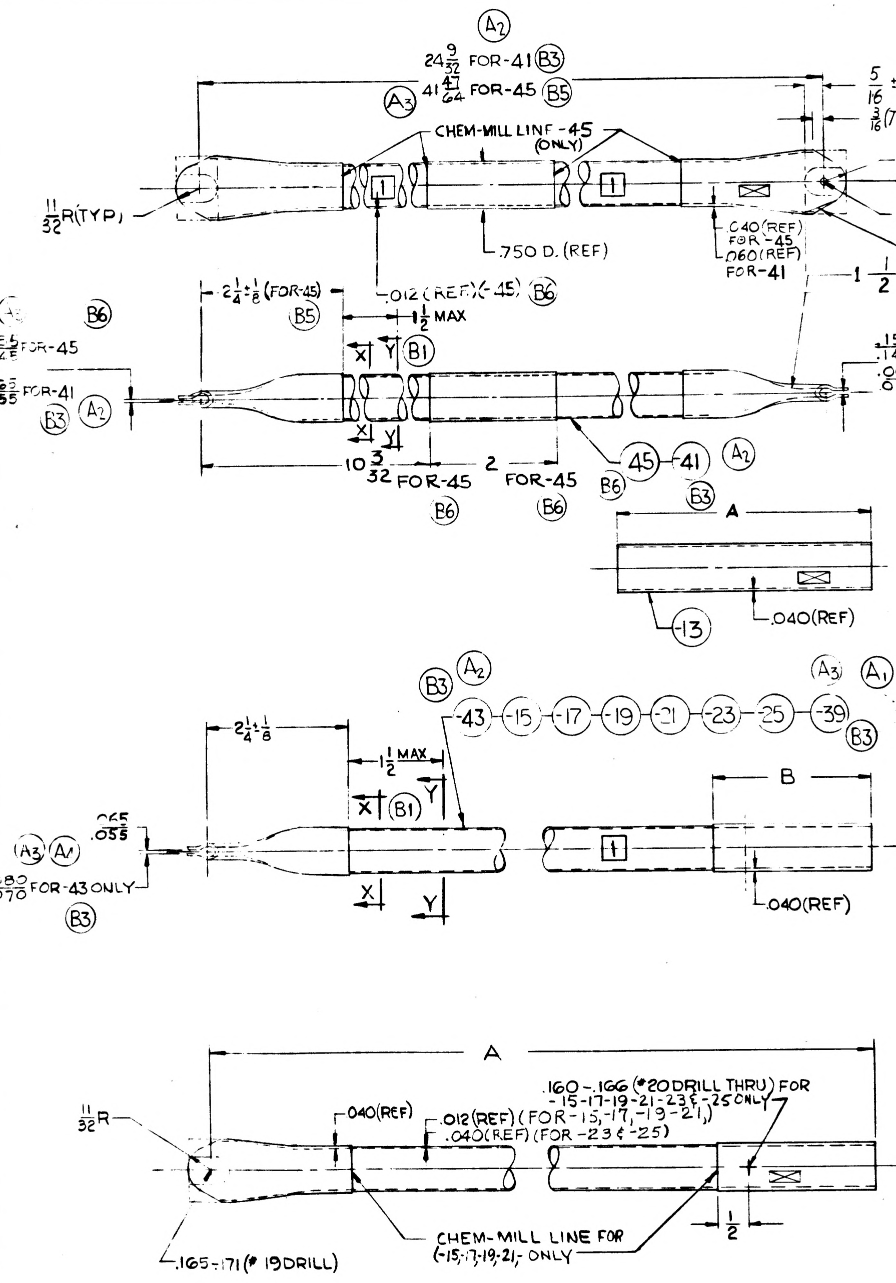
SCALE NONE

SHEET 200

ENG 77.2 7-65

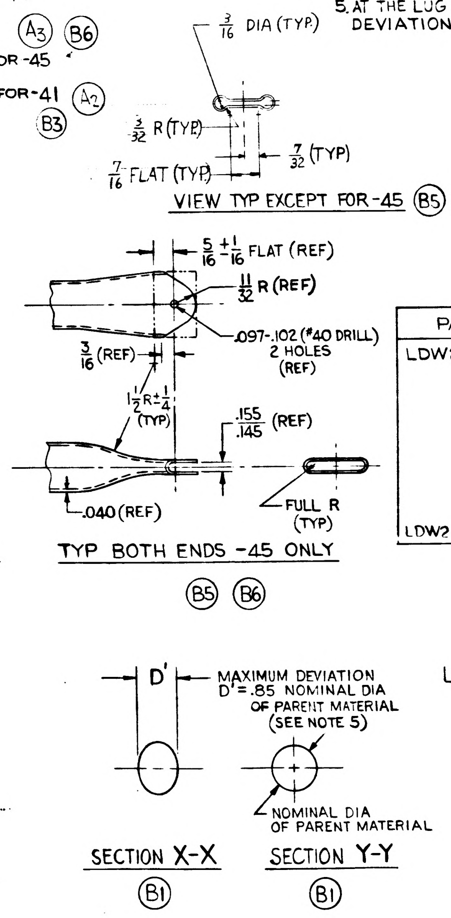
01

NAS 9-1100


24 9/32 FOR-41 (B3)
41 43/64 FOR-45 (B5)
(A2)
(A3)
CHEM-MILL LINE -45 (ONLY)
5/16 ± 1/16 FLAT (TYP.)
3/16 (TYP.)
11/32 R (TYP.)
11/32 R (TYP.)
.097-.102 (#40 DRILL) 2 HOLES
TRIM FOR -41 ONLY (B7)
.750 D. (REF)
.040 (REF) FOR -45
.060 (REF) FOR -41
1 1/2 R ± 1/4 (TYP.)
2 1/4 ± 1/8 (FOR-45) (B5)
.012 (REF) (-45) (B6)
1 1/2 MAX
.155/.145 FOR -45
.065/.055 FOR -41
.065/.055 FOR-41
10 3/32 FOR-45 (B6)
2 FOR-45 (B6)
45 41
A
13
.040 (REF)
-43 -15 -17 -19 -21 -23 -25 -39
2 1/4 ± 1/8
1 1/2 MAX
B
.065/.055
.080/.070 FOR-43 ONLY
.040 (REF)
A
11/32 R
.040 (REF)
.012 (REF) (FOR -15, -17, -19 -21)
.040 (REF) (FOR -23 & -25)
.160-.166 (#20 DRILL THRU) FOR -15-17-19-21-23 & -25 ONLY
CHEM-MILL LINE FOR (-15,-17,-19,-21) ONLY
1/2
.165-.171 (# 19 DRILL)
X Y (B1)

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. MATERIAL SHALL MEET MIL-A-8920 FOR CHEMICAL COMPOSITION AND WWT 700C FOR TOLERANCE AND TENSILE TESTING ONLY.
3. MATERIAL 2219-T62 AL ALLOY DRAWN TUBE CHEMICAL COMPOSITION PER MIL-A-8920 WITH PROPERTIES AS FOLLOWS:
   LONGITUDINAL Ftu 54,000 PSI MIN
   LONGITUDINAL Fty 36,000 PSI MIN
   ELONGATION 6% MIN
4. FLATTEN TUBE ENDS PER DWG IN ANNEALED CONDITION
5. AT THE LUG END OF FORMED TUBES, THE FOLLOWING DEVIATIONS ARE PERMISSIBLE (SEE SECTION X-X & Y-Y)


3/16 DIA (TYP.)
3/32 R (TYP.)
7/16 FLAT (TYP.)
7/32 (TYP)
5/16 ± 1/16 FLAT (REF)
11/32 R (REF)
3/16 (REF)
.097-.102 (#40 DRILL) 2 HOLES (REF)
1 1/2 R ± 1/4 (TYP)
.155/.145 (REF)
.040 (REF)
FULL R (TYP)
D'
MAXIMUM DEVIATION D' = .85 NOMINAL DIA OF PARENT MATERIAL (SEE NOTE 5)
NOMINAL DIA OF PARENT MATERIAL

VIEW TYP EXCEPT FOR -45 (B5) (B6)

TYP BOTH ENDS -45 ONLY (B5) (B6)

SECTION X-X (B1)

SECTION Y-Y (B1)

PART NO.	"A" DIM	"B" DIM
LDW280-10860-43	32 31/64	2 3/4
-13	4	—
-15	22 3/8	3 1/4
-17	14 15/32	3 1/4
-19	22 7/16	3
-21	14 5/8	3 1/4
-23	7 3/8	—
-25	8 7/8	—
LDW280-10860 -39	29 1/2	3 1/4

LDW280-10860 -15,-17,-19,-21,-45,

CHEM-MILL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THEN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
1	$.012^{+.005}_{-.001}$	.028 (REF)

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER SAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE. L. I.. NEW YORK			
LEM	SIZE D	CODE IDENT NO. 26512	LDW280-10860	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

01

NAS 9-1100

A

FITH

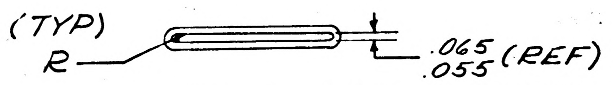
ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

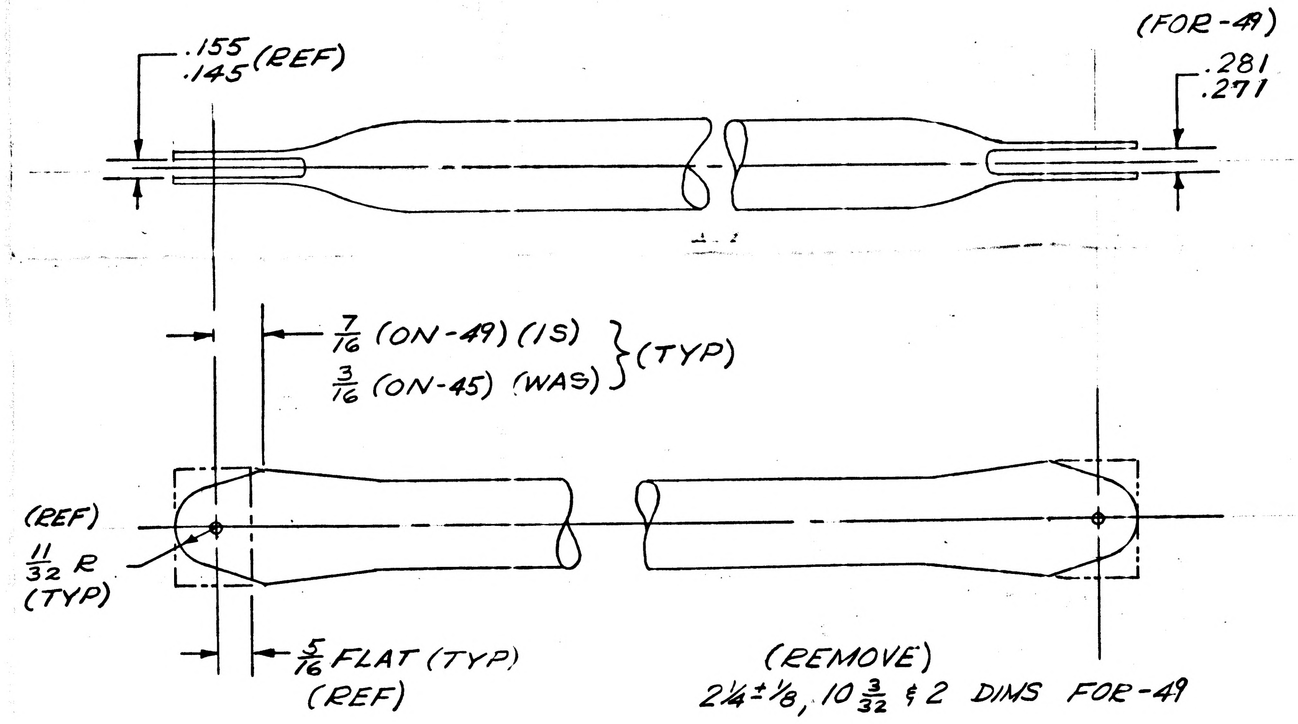
DWG. NO. LDW280-10860
EO NO. C1
CONTROL INFO NO. LDW280A-6575

(WW-T-700/3)

CREATE -47 IDENTICAL TO -41 EXCEPT MAKE -47 FROM 2024-T3 AL ALLOY TUBE 1.000 O.D. ×.049 WALL. NO CHEM-MILL REQ'D NOTES 2 & 3 ARE NOT APPLICABLE. ANNEAL PRIOR TO FORMING & RE-HEAT TREAT TO -T42. RESTRICT EFFECT OF -41 TO LTA-8 ONLY. EFFECTIVITY OF -47 IS LM-1 & LM-2 N/A OF -47 IS LDW 280-28156 (1 REQ'D).
CROSS-SECTION OF FLATTENED END OF -47 IS SHOWN BELOW.



CREATE -49 IDENTICAL TO -45 EXCEPT AS SHOWN BELOW & MAKE -49 FROM 6061-T6 AL ALLOY TUBE (MIL-T-7081) .750 O.D × .095 WALL. NO CHEM-MILL REQ'D. NOTES 2 & 3 ARE NOT APPLICABLE ANNEAL PRIOR TO FORMING & RE-HEAT TO -T6. RESTRICT EFFECTIVITY OF -45 TO LTA-8 ONLY. EFFECTIVITY OF -49 IS LM-1 & LM-2. N/A OF -49 IS LDW280-28878 (1 REQ'D)



DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG		LCD 1—1244	5

REASON FOR EO: INCREASED FITH LOADS

DESCRIPTION OF EO: CREATED -47 & -49; ON -41 & -45 REMOVED LM-1 & LM-2 REQM'TS.

Ⓡ GAEC EO RELEASE: C JK 4/27/7

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM			
LM		LM-1 (31) LM-2 (32)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK SCRAP ✓

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY								
DATE	4/25/67						4/26/67	
5	VDI							

PRIORITY: C

DRAWING TITLE: TUBE A/S - MID SECT. - PROP TANK SHLD L.H.

DRAWING NO.: LDW280-10860

EO NO.: C1

ISSUED BY: R. TEGNER X 7033 SECTION: A/S GROUP NO. 335 PL 25

01 NAS 9-1100

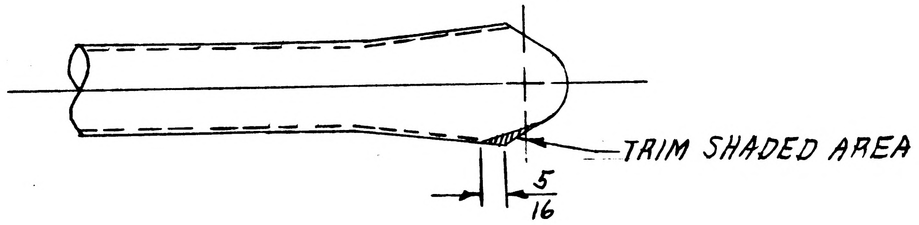
B

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10860
EO NO. C6
CONTROL INFO NO. LM-5-13038

TRIM -41 AS SHOWN-



RELEASED BY LIAISON

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐ 5

REASON FOR EO	DESCRIPTION OF EO	GAEC C EO RELEASE
TO ALLOW FOR PROPER SEATING OF STRUT	TRIMMED -41	JS 3-27-7 31

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-1 (31)	
		LM-2 (32)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY	WT			~	MBA	CH	RMC (E)	
DATE	3/20/67			~	3/21/67	3-21-67	3-27-67	3-24-67
1	VD1							

PRIORITY C

DRAWING TITLE TUBE
A/S M/S PROP TANK SHIELDING LM

DRAWING NO. LDW280-10860

EO NO. C6

ISSUED BY F. STEINMETZ X6510 SECTION VD1 GROUP NO. 335 PL 5

01 NAS 9-1100

LDW280-10861 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28231	LEM-2(32)	1 EA
LEM	LDW280-28231	LEM-1(31)	1 EA
LEM	LDW280-28231	LTA-8(18)	1 EA
PART NO. LDW280-10861-15,-17,-27 -29 & -33		GAEC SCH NO. 30	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	B	B	B	B
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED A

LAST DASH NO. USED -33

GRUMMAN REL INFO

PRIM NO. 215 VK(001) MP-5B-3/30/?

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	P.SCHELL 31 MAR 66	RELIABILITY	
LAYOUT BY	J.CALIGIURI		
CHECKED BY	Hartzman 4-8-66		
GR.LEADER	4/11		
VEH.DES.INT.	4/11		
STRUCTURES	4/12	PROJ ENGR	4-14-66
STRUCTURES	Hilderman 4/13	REL GROUP	4-16-66
WEIGHTS	4-14		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TUBE
ASCENT STAGE~MID SECTION~SHIELDING
OXIDIZER TANK~RIGHT HAND

SIZE B
CODE IDENT NO. 26512
LDW280-10861 B
SCALE NONE
SHEET 1.00 OF 4

17.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.10, 2.00 & 3.00						EO-A1	ADDED SHEET 1.10 SHEET 1.00 OF 4 WAS 1.00 OF 3 IN FLD FOR-19 .750 DIA WAS 1.50 DIA REF, IN B/M FOR-11 1.50 DIA WAS 1.150 DIA	NOT REQ'D	NOT	REQ'D	C. Castellano 6-29-66		
	2	1.00, 1.10 2.00 & 3.00							IN FLD FOR -13 ADDED 3/4 DIA AND 2 3/4 DIM, FOR-15 ADDED 90°(REF) BEND TAN LINE, FOR-11 45 DIM WAS 46 5/8. WCG	LTA-8, LEM 1 THRU LEM-6	-11				
	3								REMOVED -11 & -13, ADDED -23, -25 AND CHEM-MILL TABLES FOR SAME. EG			-11, -13	JAEGGI 8-2-66		
B	1	1.10 & 3.00						LEO-280-258	IN FLD. ADDED NOTE 7	LTA-8 & LM-1 THRU LM-6	NOT	REQD	R. NISBET 5-17-67		
	2	1.10 & 3.00						LEO-280-270	REVISED CHEM-MILL TOLERANCES $^{+.005}_{-.001}$ WAS $^{+.003}_{-.001}$ FOR -17, -19, -23 & -25	NOT REQD	NOT	REQD			
	3	1.00, 1.10, 2.00 & 3.00	5E 4G				✓	E.O.B3	REMOVED -23 & -25 AND ADDED -27 & -29. REMOVED LEM -3 THRU LEM-6 EFF. FROM MOD. BLOCK FOR ALL DASH NUMBERS.	LTA-8, LM-1 & LM-2		✓			
	4	1.10 & 3.00	4 & 8F				✓	E.O.B4	ADDED NOTE 8 AND SEE NOTE 8 CALLOUT TO -27 & -29.		✓				
	5	1.00, 1.10, 2.00 & 3.00	5B					E.O.B5	REMOVED -19 & ADDED -31.			-19			
	6	1.00, 1.10, 2.00 & 3.00	5B					E.O.B6	REMOVED -31, ADDED -33			-31			
	7	1.00 & 1.10						E.O.B7	REF. E.O.B6: ON-33 REMOVED T62 HEAT TREAT & ADD T42 HEAT TREAT. A.S.		✓				

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY
B						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10861	B
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	~~ZONE~~
		LDW280-10861-27	E	TUBE	AL ALLOY TUBE	SEE NOTE 4&5	2219	1.50 OD X .040 X 50	T62	76	
		-33	↕	↕	↕	↕	↕	.150 OD x .040 x 55 7/8	T42	↕	FF
		-17	↕	↕	↕	↕	↕	.750 OD x .040 x 31	CM-T62	↕	
		-15	↕	↕	↕	↕	↕	.750 OD x .040 x 71/8	T62	↕	FF
		LDW280-10861-29	E	TUBE	AL ALLOY TUBE	SEE NOTE 4&5	2219	1.000 OD x .040 x 19 3/4	T62	76	FP

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
CM	CHEM-MILLING	LSP 14-26100
76	ALODINE	LSP 14-9010
FP	ZYGLO	MIL-I-6866
T62	HEAT TREAT	MIL-H-6088
T42	HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10861	B.

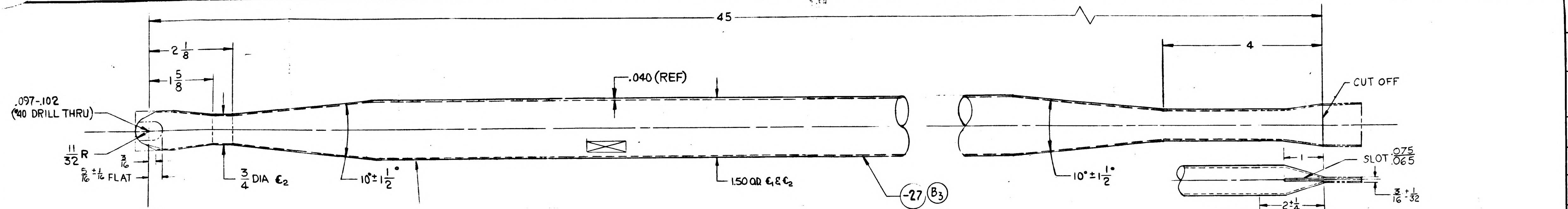
SCALE NONE

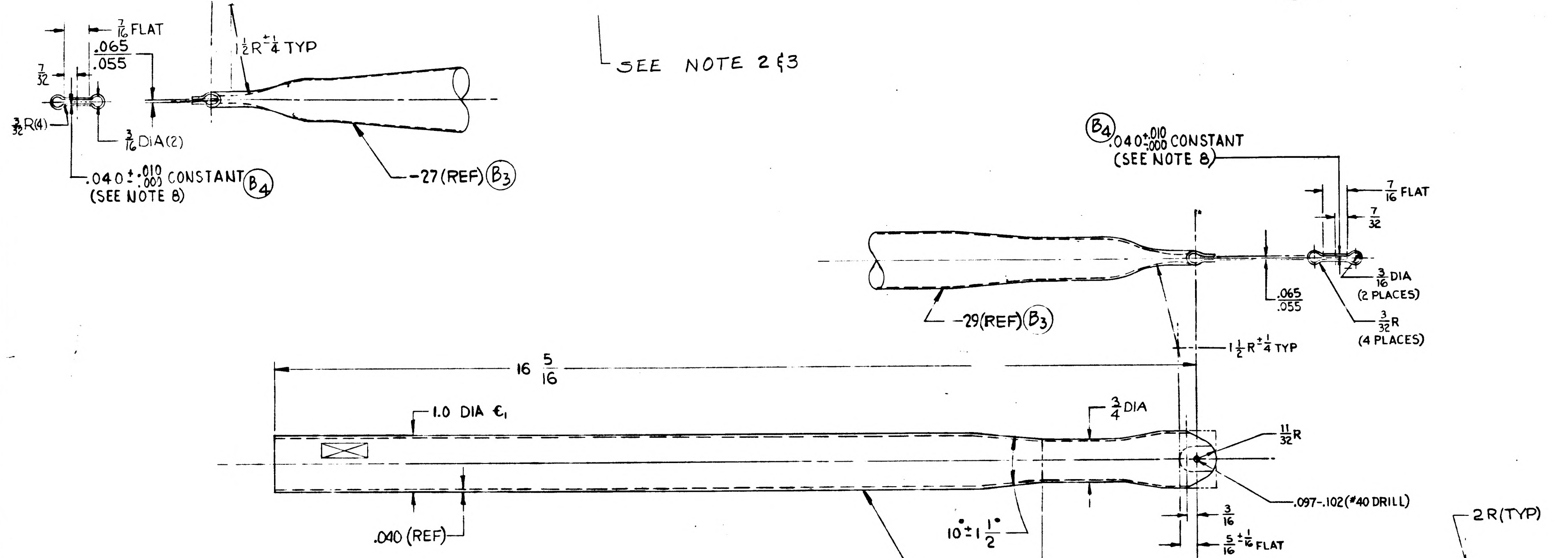
SHEET 2.00

ENG 77.2 7-65

01

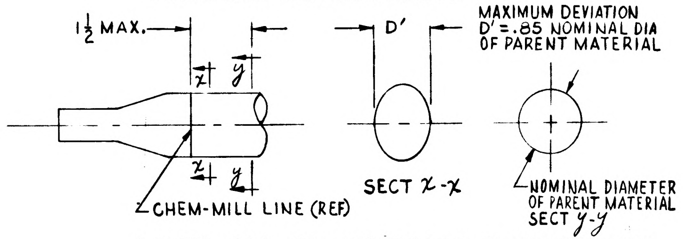
NAS 9-1100


45
2 1/8
1 5/8
.040 (REF)
4
.097-.102 (#40 DRILL THRU)
CUT OFF
11/32 R
3/16
5/16 ± 1/16 FLAT
3/4 DIA €2
10° ± 1 1/2°
1.50 O.D. €1 & €2
-27 (B3)
10° ± 1 1/2°
1
SLOT .075/.065
2 ± 1/4
3/16 +1/-32

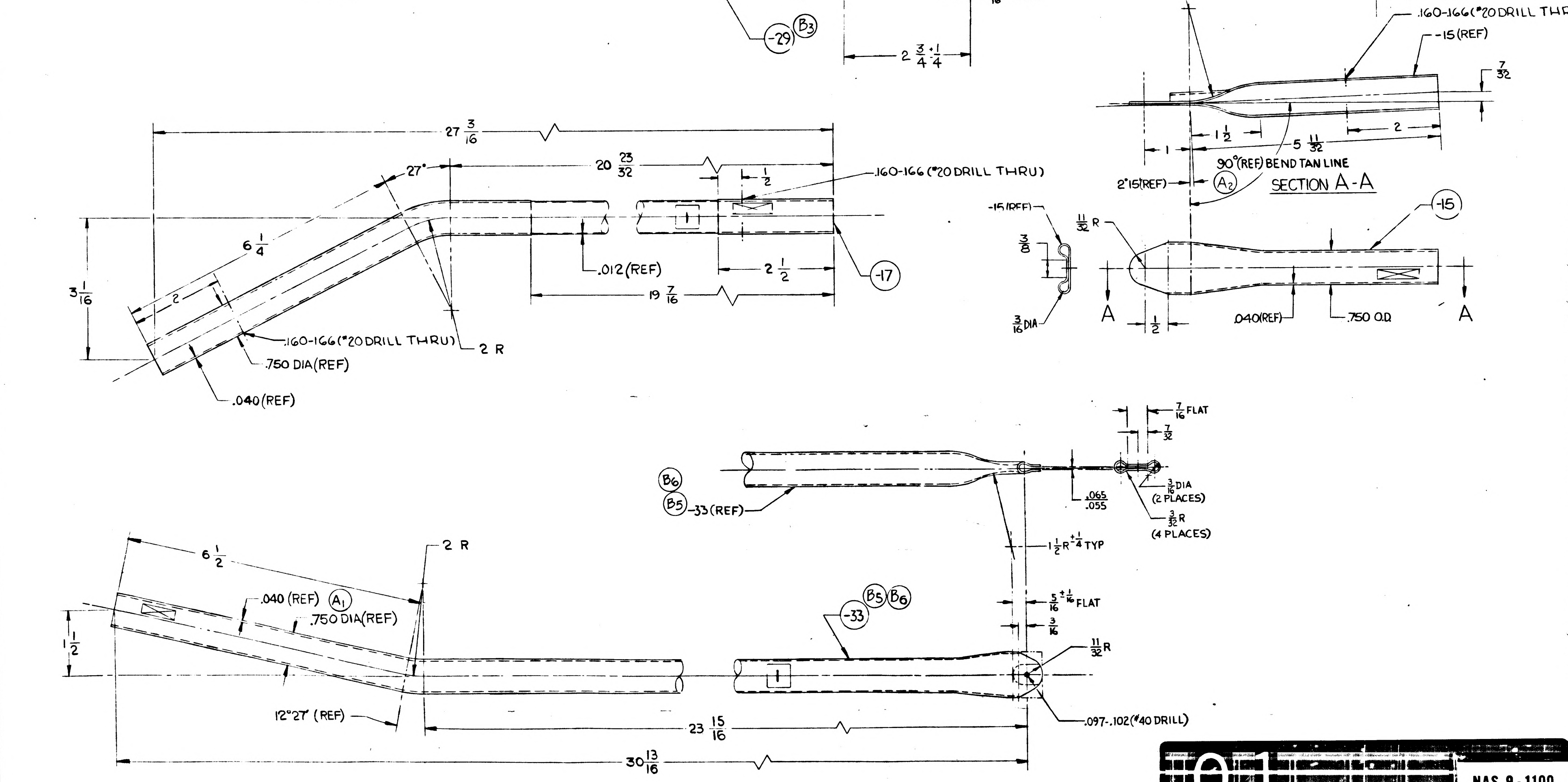

SEE NOTE 2 & 3
7/16 FLAT
.065/.055
7/32
1 1/2 R ± 1/4 TYP
3/32 R (4)
3/16 DIA (2)
.040 ±.010/.000 CONSTANT (B4)
(SEE NOTE 8)
-27 (REF) (B3)
(B4) .040 ±.010/.000 CONSTANT
(SEE NOTE 8)
7/16 FLAT
7/32
3/16 DIA (2 PLACES)
3/32 R (4 PLACES)
.065/.055
-29 (REF) (B3)
1 1/2 R ± 1/4 TYP
16 5/16
1.0 DIA €1
3/4 DIA
11/32 R
.097-.102 (#40 DRILL)
.040 (REF)
10° ± 1 1/2°
3/16
5/16 ± 1/16 FLAT
-29 (B3)
2 3/4 ± 1/4
2 R (TYP)

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. SWAGE PER LSP 14-15500 USING CRITERIA FOR 2024 MATERIAL.
3. FLATTEN TUBE ENDS PER DWG IN ANNEALED CONDITION.
4. MATERIAL SHALL MEET MIL-A-8920 FOR CHEMICAL COMPOSITION AND WWT 700 C FOR TOLERANCE AND TENSILE TESTING ONLY.
5. MATERIAL 2219-T62 AL ALLOY DRAWN TUBE CHEMICAL COMPOSITION PER MIL-A-8920 WITH PROPERTIES AS FOLLOWS:
   LONGITUDINAL Ftu 54,000 PSI MIN
   LONGITUDINAL Fty 36,000 PSI MIN
   ELONGATION 6% MIN
6. SWAGE PRIOR TO CHEM-MILL
7. AT THE LUG END OF FORMED TUBES, THE FOLLOWING DEVIATIONS ARE PERMISSABLE.


1 1/2 MAX.
D'
MAXIMUM DEVIATION
D' = .85 NOMINAL DIA
OF PARENT MATERIAL
x
y
CHEM-MILL LINE (REF)
SECT x-x
NOMINAL DIAMETER
OF PARENT MATERIAL
SECT y-y

8. TUBES -27 & -29 MUST BE BORED TO WALL THICKNESS OF .040 ±.010/.000 CONSTANT AFTER SWAGING AND BEFORE FLATTENING.


.160-166 (#20 DRILL THRU)
-15 (REF)
7/32
1 1/2
5 11/32
2
1
90° (REF) BEND TAN LINE
2° 15' (REF)
(A2)
SECTION A-A
-15 (REF)
3/8
11/32 R
3/16 DIA
A
1/2
.040 (REF)
.750 O.D.
A
-15
27 3/16
27°
20 23/32
1/2
.160-166 (#20 DRILL THRU)
6 1/4
3 1/16
2
.012 (REF)
2 1/2
19 7/16
-17
.160-166 (#20 DRILL THRU)
2 R
.750 DIA (REF)
.040 (REF)
7/16 FLAT
7/32
(B6)
(B5) -33 (REF)
3/16 DIA (2 PLACES)
.065/.055
3/32 R (4 PLACES)
1 1/2 R ± 1/4 TYP
6 1/2
2 R
.040 (REF) (A1)
.750 DIA (REF)
1 1/2
-33 (B5)(B6)
5/16 ± 1/16 FLAT
3/16
11/32 R
12° 27' (REF)
.097-.102 (#40 DRILL)
23 15/16
30 13/16

LDW280-10861-23 (B2)(B3)

CHEM-MILL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
1	.025 +.005/-.001	.015 (REF)

LDW280-10861-17 (B2)(B5)

CHEM-MILL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
1	.012 +.005/-.001	.028 (REF)

LDW280-10861-25 (B2)(B3)

CHEM-MILL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
1	.027 +.005/-.001	.022 (REF)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED € MUST BE CONCENTRIC WITHIN AS NOTED FULL INDICATOR READING €1 = .030 €2 = .030	✓
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ƒ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS ALLOY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK
SIZE E
CODE IDENT NO. 26512
LDW280-10861
B
LEM
MODEL OR END ITEM
SCALE NONE
SHEET 3.30

LDW280-10861 B

LDW280-10864 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28155	LEM-2(32)	1
LEM	LDW280-28155	LEM-1(31)	1
LEM	LDW280-28155	LTA-8(18)	1
PART NO. LDW280-10864-19		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28878	LEM-2(32)	1
LEM	LDW280-28878	LEM-1(31)	1
LEM	LDW280-28878	LTA-8(18)	1
PART NO. LDW280-10864-17		GAEC SCH NO. 30	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A		
LAST DASH NO. USED	-19	PRIM NO.	LE(001)	
		215	MP-A	9-13-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100 | LINE ITEM 1 | DOCUMENTATION TYPE II

DRAWN BY	E. ERICKSON 3-31-66	RELIABILITY	
LAYOUT BY	CALIGIURI		
CHECKED BY	4-4-66		
GR. LEADER	4/11		
VEH DES INT	4/11		
STRUCTURE	4/12	PROJ ENGR	4-13-66
STRUCTURE	Hildebrand 4/12	REL GROUP	C. Chiamanici 4-15-66
WEIGHTS	Lamonte 4-12		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TUBE
ASCENT STAGE-MID SECT-SHIELDING-PROP. TANK-L.H.

SIZE	CODE IDENT NO.		
B	26512	LDW280-10864	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

01 NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10 2.00, 3.00							REMOVED -11 ADDED -17. IN GOVT SPEC COLUMN SEE NOTE 2&3 WAS 1&2. SH 1 OF 4 WAS 1 OF 3.	NOTED		-11	MELMED 6-29-66		
	2							®	REMOVED -13 & -15. ADDED -19	NOTED		-13, -15	JAEGGI 8-2-66		

CHG APPROVED LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY				
A										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10864	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	
		LDW280-10864-19	E	TUBE	AL ALLOY TUBE	SEE NOTE 2&3	2219	.750 O.D x .060 x 28 1/8	CM&T62	76	FP
		LDW280-10864-17	E	TUBE	AL ALLOY TUBE	SEE NOTE 2&3	2219	.750 O.D x .040 x 43 3/8	CM&T62	NONE	FP

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
CM	CHEM-MILLING	LSP 14-26100
T62	AL HEAT TREAT	MIL-A-8920
76	ALODINE	LSP14-9010
FP	ZYGLO	MIL-I-6866

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10864	A

SCALE NONE

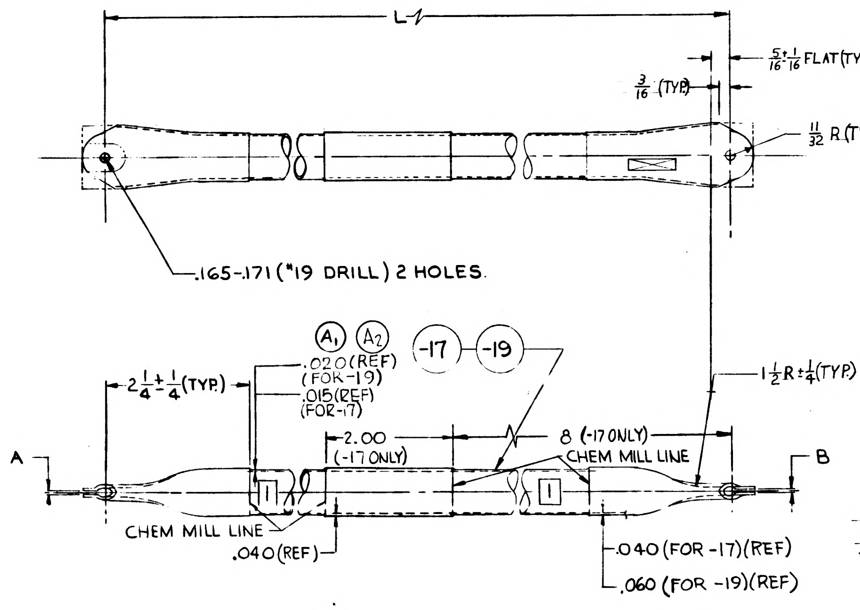
SHEET 2.00

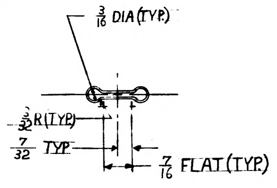
ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1 NO TOOLING HOLES PERMITTED IN PARTS
2 MATERIAL SHALL MEET MIL-A-8920 FOR CHEMICAL COMPOSITION AND WWT 700C FOR TOLERANCE AND TENSILE TESTING ONLY.
3 MATERIAL 2219-T62 AL ALLOY DRAWN TUBE CHEMICAL COMPOSITION PER MIL-A-8920 WITH PROPERTIES AS FOLLOWS:
LONGITUDINAL Ftu 54.000 P.S.I. MIN.
LONGITUDINAL Fty 36.000 P.S.I. MIN.
ELONGATION 6% MIN.
4 FLATTEN TUBE ENDS PER DWG IN ANNEALED CONDITION





PART NO.	"A" DIM.	"B" DIM.	"L" DIM.
LDW280-10864-17	.140-.150	.185-.195	39 11/16
LDW280-10864-19	.070-.080	.115-.125	24 7/16

LDW280-10864-17

CHEM-MILL LINE TOLERANCE
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	$.015^{+.003}_{-.001}$	.025 (REF)

Ⓐ2

LDW280-10864-19

CHEM-MILL LINE TOLERANCE
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	$.020^{+.003}_{-.001}$	.040 (REF)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-10864	A
SCALE FULL			SHEET 3.00	

LDW280-10864 A

01

NAS 9-1100

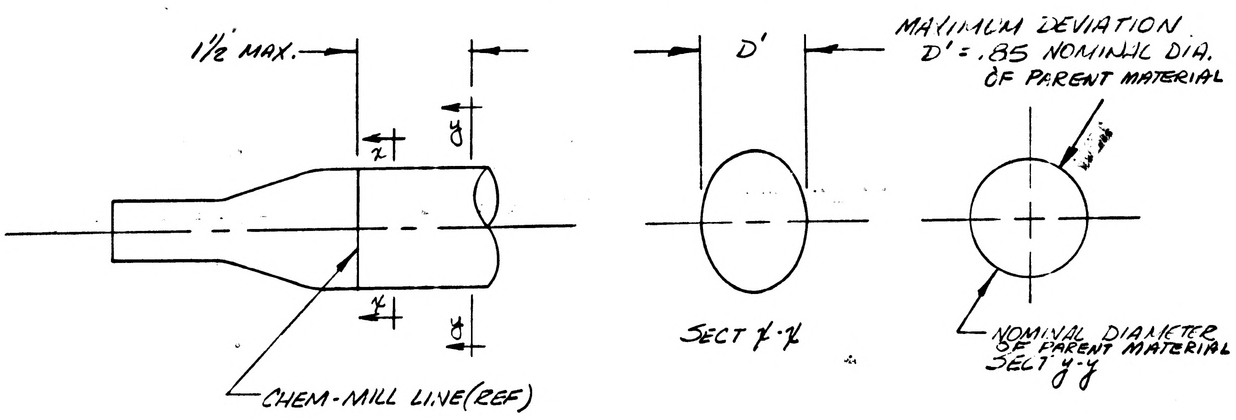
H.G.

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280		EO NO. 258
CONTROL INFO NO. LEM-2-2704		

IN F/O ADD NOTE *
AT THE LUG END OF FORMED TUBES, THE FOLLOWING DEVIATIONS ARE PERMISSIBLE.



1/2 MAX.
x
y
CHEM-MILL LINE (REF)
D'
SECT x-x
MAXIMUM DEVIATION D' = .85 NOMINAL DIA. OF PARENT MATERIAL
NOMINAL DIAMETER OF PARENT MATERIAL SECT y-y

DRAWING	CHANGE NO
✓ LDW 280-10661	B2
✓ -10670	A3
✓ -10851	A1
✓ -10852	B1
✓ -10853	A1
✓ -10857	B1
✓ -10858	B1
✓ -10859	C1
✓ -10860	B1
✓ -10861	B1
✓ LDW 280-10864	B1

* NEXT AVAILABLE NOTE

2

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☐

REASON FOR EO: EASE OF MANUFACTURING

DESCRIPTION OF EO: IN F/O ADDED NOTE *.

GAEC EO RELEASE: LE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
		LTA-8 (18)	
LEM		LEM 1-6 (31-36)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		NOT	REQD

APPROVED BY		LBey			GLW	CLW	RMC	AC
DATE	9/1	9/1/66		9/1	9-2-66	9-2-66	9-13	9-9-66
9-1-66	VHI	~~SUPPORT~~ WIS	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~[illegible]~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C2	SEE DRAWING	LEO-280	258

ISSUED BY LIAISON: G. MARTELL x3604 / HEATON SECTION VEH DES INT GROUP NO. 335 PL. 3

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10864 | EO NO. B2
CONTROL INFO NO. LDW280-A-0610

IN F/D, TABLES, NOTES, B/M & MODEL BLOCK REMOVE CHEM-MILLED TUBES -17 & -19 AND ADD TUBE -21 & -23, IDENTICAL TO REMOVED TUBE EXCEPT FOR OMISSION OF CHEM-MILLING.

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐	3

REASON FOR EO: TO EXPEDITE MANUFACTURE

DESCRIPTION OF EO: REMOVED -17 & -19 AND ADD -21 & -23 IDENTICAL TO REMOVED PARTS EXCEPT FOR OMISSION OF CHEM-MILLING.

GAEC C EO RELEASE: FR 9/23/66

MODEL	EFFECTIVITY PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA-8 (18)	
LEM		LEM 1 (31)	
LEM		LEM 2 (32)	

DRAWING CHANGE REQD: REVISE DWG ☑ RECORD EO ☐

DISPOSITION OF PARTS: REWORK ☐ SCRAP ☑

APPROVED BY									
DATE ✓	9/21	9/27/66		9/21	9/21		9-22-66	9-22-66
9/21/66	V.D.I.	~~SUPPORT~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~COPY~~

PRIORITY: C

DRAWING TITLE: TUBE ~ ASCENT STAGE ~ MID-SECT. SHIELDING ~ PROP TANK ~ L.H.

DRAWING NO.: LDW280-10864

EO NO.: B2

ISSUED BY D. COPPI / P. HENTON (x1153) SECTION VEH. DES. INT. GROUP NO 335 PL 35

EMF

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NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10864
EO NO. B3
CONTROL INFO NO. LDW280A-0759

IN B/M & F/D MATERIAL FOR-23, AL. ALLOY 2024-T3, WW T785, .750 O.D. × 065×28 1/8 STOCK SIZE (WAS AL. ALLOY 2219 TG2, MIL-A-8920, .750 O.D.×.060×28 1/8 STOCK SIZE)

3

DETA'L SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

REASON FOR EO: ORIGINAL MATERIAL UNAVAIL ABLE

DESCRIPTION OF EO: ADDED MATERIAL, AL ALLOY 2024 T3

GAEC EO RELEASE: FR 10/1/66

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-2 (32)	
LM		LM-1 (31)	
LM		LTA-8 (18)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO ☐
DISPOSITION OF PARTS: REWORK ✓ SCRAP ☐

APPROVED BY		SR						RME	
DATE	9/28	10-4		9/28	9/30		9-30-66	9/30/66
9/28/66	VDI	~~SUPPORT~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C
DRAWING TITLE: TUBE, A/S, M/S, SHD. PROP. TANK L.H.
DRAWING NO.: LDW280-10864
EO NO.: B3

ISSUED BY P. FRANZESE x1804 SECTION VDI GROUP NO. 335 PL 35 EMF

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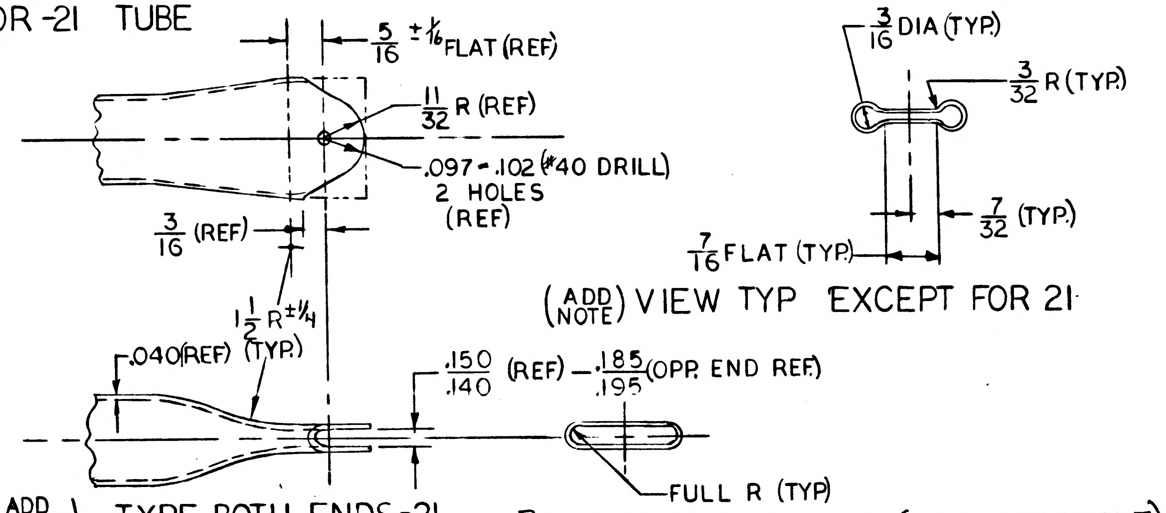
NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10864
EO NO. B4
CONTROL INFO NO. LDW280A0865

IN FIELD OF DWG ADD & RESTRICT VIEWS TO DEFINE END CONDITIONS FOR -21 TUBE


5/16 ± 1/16 FLAT (REF)
11/32 R (REF)
.097 - .102 (#40 DRILL) 2 HOLES (REF)
3/16 (REF)
1 1/2 R ± 1/4 (TYP.)
.040 (REF)
.150/.140 (REF)
.185/.195 (OPP. END REF.)
FULL R (TYP)
3/16 DIA (TYP.)
3/32 R (TYP.)
7/32 (TYP.)
7/16 FLAT (TYP.)

(ADD NOTE) VIEW TYP EXCEPT FOR 21

(ADD VIEWS) TYPE BOTH ENDS-21

IN B/M FOR -21 FINISH 76 (WAS FINISH NONE)

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐

REASON FOR EO: TOOLING REQUEST

DESCRIPTION OF EO: IN F/D ADDED VIEWS TO DEFINE END CONDITION FOR -21 & ADDED NOTE TO RESTRICT EXISTING END VIEWS, FOR -21 FINISH 76 (WAS NONE) (3)

GAEC EO RELEASE: FS 10-7-6

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-2 (32)	
LM		LM-1 (31)	
LM		LTA-B (18)	

DRAWING CHANGE REQD: ☑ REVISE DWG ☐ RECORD EO
DISPOSITION OF PARTS: ☑ REWORK ☐ SCRAP

APPROVED BY		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
DATE 9-30-66	9/30 VD1			9/30.	10/1		10-6-66	10/4/66

PRIORITY: C
DRAWING TITLE: TUBE - A/S, M/S SHIELDING PROP. TANK - L.H
DRAWING NO. LDW280-10864
EO NO. B4

ISSUED BY P. FRANZESE X1804 SECTION V.D.1. GROUP NO. 335 PL 35

01

NAS 9-1100

ENG 32.1 REV 3-65

FITH

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW 280-10864
EO NO. B5
CONTROL INFO NO. LDW 280A-6607

CREATE -25 TUBE IDENTICAL TO -21 TUBE EXCEPT THAT $13/32$ RADIUS ON BOTH ENDS WAS $11/32$ RADIUS.

N/A: LDW 280-28878
EFF: LM-1 (31) AND LM-2 (32)
QUANTITY: 1 EA. REQ'D

REMOVE LM-1 (31) AND LM-2 (32) EFFECTIVITY FROM -21

DETAIL SPEC REQ ☐ CL II ENGRG CHG ✓ CL I ENGRG CHG ☐ LCD # 1244

5

REASON FOR EO: INCREASED 'FITH' LOADS.

DESCRIPTION OF EO: ADDED -25 REMOVED -21

GAEC EO RELEASE C (2) JK 4/27/67

MODEL	EFFECTIVITY		
	~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	~~SUB CONTR UNIT NO.~~
LM	LM-1 (31)	LM-2 (32)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY	Jal			ZNR	JV			Bott
✓			-21	DATE	4/27/67			4/27/67	4/27/67		4/ /67	4-28-67
REVISE DWG	RECORD EO	REWORK	SCRAP	5	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C
DRAWING TITLE: TUBE - ASCENT STAGE, MID-SECTION, SHIELDING, PROP. TANK, L.H.
DRAWING NO.: LDW 280-10864
EO NO.: B5

ISSUED BY Geo. W. Rocklein x7033 4/27/67
SECTION Veh. Des. Int.
GROUP NO. 335
PL 25

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53226	QUALTEST(70)	1EA
↑	↑	PA-1(47)	1EA
	↓	LM-15(45)	1EA
		THRU	
↓	LDW280-53226	LM-3(33)	1EA
LEM	LDW280-28226	LEM-2(32)	1EA
LEM	LDW280-28226	LEM-1(31)	1EA
LEM	LDW280-28226	LTA-8(18)	1EA
PART NO LDW280-10865-17&18			
LM	LDW280-53231	QUALTEST(70)	2
↑		PA-1(47)	2
		LM-15(45)	2
		THRU	
↓	LDW280-53231	LM-3(33)	2
LEM	LDW280-28231	LEM-2(32)	2
LEM	LDW280-28231	LEM-1(31)	2
LEM	LDW280-28231	LTA-8(18)	2
PART NO. LDW280-10865-13		GAEC SCH NO. 30-	

LDW280-10865B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53878	LM-15(45)	1
↑	↕	THRU	
↓	LDW280-53878	LM-3(33)	1
LEM	LDW280-28878	LTA-8(18)	2
LEM	LDW280-28878	LEM-2(32)	2
LEM	LDW280-28878	LEM-1(31)	2
PART NO. LDW280-10865-25			
LM	LDW280-53226	QUALTEST(70)	12
↑	↑	PA-1(47)	12
	↓	LM-15(45)	12
↓	LDW280-53226	LM-3(33)TO	12
LEM	LDW280-28226	LEM-2(32)	12
LEM	LDW280-28226	LEM-1(31)	12
LEM	LDW280-28226	LTA-8(18)	12
PART NO. LDW280-10865-15		GAEC SCH NO. 30-	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53878	QUALTEST(70)	2
↑	LDW280-28878	LM-2(32)	2
	LDW280-28878	LM-1(31)	2
	LDW280-53878	PA-1(47)	1
	↑	LM-15(45)	1
↓	↓	THRU	
LM	LDW280-53878	LM-3(33)	1
PART NO. LDW280-10865-27			
LM	LDW280-53231	QUALTEST(70)	4
↑	↑	PA-1(47)	4
		LM-15(45)	4
	↓	THRU	
↓	LDW280-53231	LM-3(33)	4
LEM	LDW280-28231	LEM-2(32)	4
LEM	LDW280-28231	LEM-1(31)	4
LEM	LDW280-28231	LTA-8(18)	4
PART NO. LDW280-10865-23			
LM	LDW280-53231	QUALTEST(70)	8
↑	↑	PA-1(47)	8
		LM-15(45)	8
	↓	THRU	
↓	LDW280-53231	LM-3(33)	8
LEM	LDW280-28231	LEM-2(32)	8
LEM	LDW280-28231	LEM-1(31)	8
LEM	LDW280-28231	LTA-8(18)	8
PART NO. LDW280-10865-11		GAEC SCH NO. 30-	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	B	B	B	B
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -27

GRUMMAN REL INFO B

PRIM NO. 215 JK(001) ME-3 [illegible]

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	F.HIPPLER 4-8-66	RELIABILITY	
LAYOUT BY	J.A.GALIGURI		
CHECKED BY	[illegible] 4-8-66		
GR.LEADER	[illegible] 4/11		
VEH.DES.INT.	[illegible] 4/11		
STRUCTURE	[illegible] 4/12	PROJ ENGR	[illegible] 4-13-66
STRUCTURE	Alderman 4/12	REL GROUP	[illegible] 4-14-66
WEIGHTS	Lamott 4-13		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE-MID SECT. SHEILDING FRAME
FUEL & OXIDIZER TANK LEFT & RIGHT HALF

SIZE B | CODE IDENT NO. 26512 | LDW280-10865 | B

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
A	1	1.00,1.10 & 3.00							ADDED SH 1.10, SH 1.00 OF 4 WAS SH 1.00 OF 3 IN FIELD ADDED ".097-.102 (#40 DRILL)" CALLOUTS W/ASSOC LOCATING DIMENSIONS.	NOT REQD	✓		Collett 8/29/66 J.A		
	2	1.00, 1.10 2.00 & 3.00							ADDED -18 & -25 ON SH. 1 REMOVED LEM-3 THRU 6 FROM ALL DASH NO'S. Ⓐ EJR	NOTED		✓	MULLER 9/2/66 JK		
B	1	1.00					✓	E.O.B1	ON-11,-13,-23 ADDED N/A LDW280-53231 EFF LM-3 THRU-15 ON-15,-17,-18 ADDED N/A LDW280-53226 EFF LM-3 THRU-15 ON-25 ADDED N/A LDW280-53878 EFF LM-3 THRU-15	LM-3(33) THRU LM-15(45)	NOT	REQD	S. CARANO 12-3-68		
	2	1.00, 2.00 3.00						E.O.B2	IN FLD., B/M, & M/B ADDED -27. IN M/B FOR -25 REVISED QTY REQ'D. (WAS 2 PER MOD.)	LM-3(33) THRU LM-15(45)		-25			
	3	1.00					✓	LEO280-509 LCD—1124	ON-11,-13,-23 ADDED PA-1(47) EFF.	PA-1(47)	NOT	REQ'D.			
	4	1.00					✓	LEO280-523 LCD—1124	ADDED PA-1(47) TO -15,-17 & -18,-27	PA-1(47)					
	5	1.00					✓	EOB5	REF EOB2: IN FLD., B/M, M/B, ADDED LM-1 & LM-2 EFF. 2 REQ'D./MOD., N/A LDW280-28878 FOR -27.	LM-1(31) LM-2(32)		-25			
	6	1.00					✓	LEO280-731 LCD 2104	FOR -11,-13,-23,-27 ADDED QUAL TEST REQ'MTS.	QUAL TEST(70)	NOT	REQ'D.			
	7	1.00					✓	LEO280-739 LCD 2104 Ⓑ	FOR -15,-17 & -18 ADDED QUAL TEST REQM'TS.						

CHG APPROVED

LTR	GROUP LDR	VDI	STRUCT	STRUCT	WEIGHTS	RELIAB
A						
B						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10865	B

SCALE NONE

SHEET 1.10 Ⓑ

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10865-27	E	LUG	AL ALY SH	QQ-A250/11	6061-O	.080 X 17/8 X 21/8	T6	NONE	
		LDW280-10865-25		LUG	AL ALY SH	SEE NOTE 2	2219-T81	.080 x 17/8 x 21/8	NONE	NONE	
		-23		GUSSET PLATE				.040 x 13/4 x 21/2		76	
		-18						.040 x 25/8 x 33/8			
		-17						.040 x 25/8 x 33/8			
		-15						.040 x 13/4 x 2			
		-13						.040 x 13/4 x 2			
		LDW280-10865-11	E	GUSSET PLATE	AL ALY SH	SEE NOTE 2	2219-T81	.040 x 15/8 x 13/4	NONE	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
76	ALODINE	LSP 14-9010
T6	HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-10865
B

SCALE NONE
SHEET 2.00

ENG 77.2 7-65

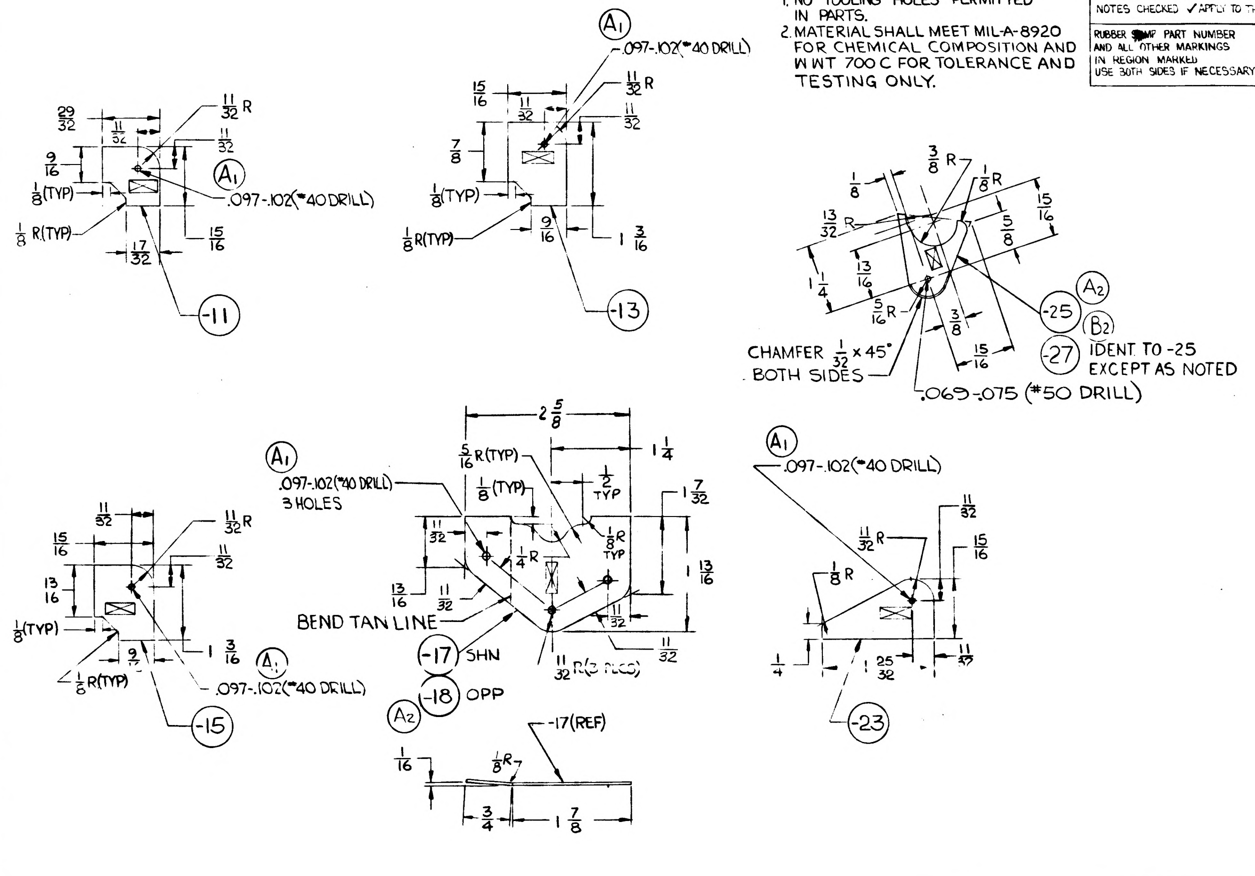
01

NAS 9-1100

LDW280-10865

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. MATERIAL SHALL MEET MIL-A-8920 FOR CHEMICAL COMPOSITION AND WWT 700C FOR TOLERANCE AND TESTING ONLY.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY	✓


-11
-13
-15
-17 SHN
-18 OPP
-17(REF)
-23
-25
-27 IDENT TO -25 EXCEPT AS NOTED
A1
A2
B2
.097-.102(#40 DRILL)
.097-.102(#40 DRILL) 3 HOLES
.069-.075 (#50 DRILL)
CHAMFER 1/32 x 45° BOTH SIDES
BEND TAN LINE
1/8(TYP)
1/8 R(TYP)
5/16 R(TYP)
11/32 R
3/8 R
1/8 R
1/4 R
2 5/8
1 1/4
1 7/32
1 3/16
13/16
15/16
9/16
29/32
7/8
1/2 TYP
3/4
1 7/8
1/16
25/32

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
LEM	SIZE C	CODE IDENT NO. 26512	LDW280-10865	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

ENG 73-2 6-64

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10866-27	E	GUSSET	AL ALY SH	MIL-A-8920	2219-T81	.040×1 5/8×1 7/8	NONE	88	
		-25						.040×2 1/2×2 3/4			
		-23						.063×1 3/4×2			
		-21						.063×2 1/8×2 3/8			
		LDW280-10866-15	E	GUSSET	AL ALY SH	MIL-A-8920	2219-T81	.063×2 5/8×2 5/8	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10866	A

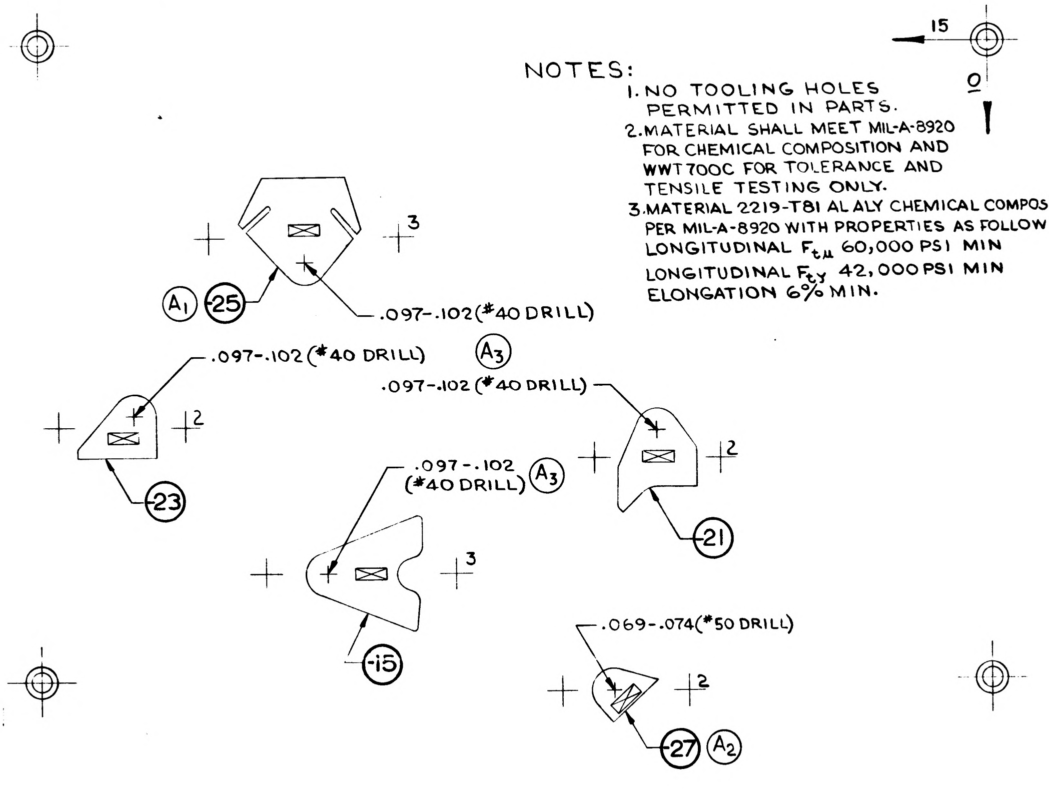
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. MATERIAL SHALL MEET MIL-A-8920 FOR CHEMICAL COMPOSITION AND WWT700C FOR TOLERANCE AND TENSILE TESTING ONLY.
3. MATERIAL 2219-T81 AL ALY CHEMICAL COMPOSITION PER MIL-A-8920 WITH PROPERTIES AS FOLLOWS:
LONGITUDINAL F_{tu} 60,000 PSI MIN
LONGITUDINAL F_{ty} 42,000 PSI MIN
ELONGATION 6% MIN.

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK
LEM
MODEL OR END ITEM
SIZE C
CODE IDENT NO. 26512
LDW280-10866 A
SCALE FULL
SHEET 3.00

LDW280-10866 A

FOR PHOTO REPRODUCTION

K2

NAS 9-1100

LDW280-10866 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53231	QUAL TEST(70)	4
		PA-1 (W5)	4
		LM-15 (45)	4
		LM-14 (44)	4
		LM-13 (43)	4
		LM-12 (42)	4
		LM-11 (41)	4
		LM-10 (40)	4
		LM-9 (39)	4
		LM-8 (38)	4
		LM-7 (37)	4
		LM-6 (36)	4
		LM-5 (35)	4
		LM-4 (34)	4
LM	LDW280-53231	LM-3 (33)	4
LEM	LDW280-28231	LEM-2 (32)	4
LEM	LDW280-28231	LEM-1 (31)	4
LEM	LDW280-28231	LTA 8 (18)	4

PART NO. LDW280-10866-23 — GAEC SCH NO. 30-

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53231	QUAL TEST(70)	2
LM	LDW280-53231	PA-1 (47)	2
LM	LDW280-53231	LM-15 (45)	2
		THRU	
LM	LDW280-53231	LM-3 (33)	2
LEM	LDW280-28231	LEM-2 (32)	2
LEM	LDW280-28231	LEM-1 (31)	2
LEM	LDW280-28231	LTA-8 (18)	2

PART NO. LDW280-10866-21 — GAEC SCH NO. 30

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28226	LM-2 (32)	2
LM	LDW280-28226	LM-1 (31)	2
LM	LDW280-28226	LTA-8 (18)	2

PART NO. LDW280-10866-27

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	RFQD PER MODULE OR END ITEM
LM	LDW280-53226	QUAL TEST(70)	2EA
		PA-1 (W5)	2EA
		LM-15 (45)	2EA
		LM-14 (44)	2EA
		LM-13 (43)	2EA
		LM-12 (42)	2EA
		LM-11 (41)	2EA
		LM-10 (40)	2EA
		LM-9 (39)	2EA
		LM-8 (38)	2EA
		LM-7 (37)	2EA
		LM-6 (36)	2EA
		LM-5 (35)	2EA
		LM-4 (34)	2EA
LM	LDW280-53226	LM-3 (33)	2EA
LEM	LDW280-28226	LEM-2 (32)	2 EA
LEM	LDW280-28226	LEM-1 (31)	2 EA
LEM	LDW280-28226	LTA-8 (18)	2 EA

PART NO. LDW280-10866-15&-25 — GAEC SCH NO. 30-

(C)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		1.10	2.00	3.00				
REV	B		B	A	A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -27

GRUMMAN REL INFO B

PRIM NO. 215 — X(001) ME-3B 11/13/

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY	HERB. SCHWETER 4/7/66	RELIABILITY	
LAYOUT BY	J. CALIGIURI		
CHECKED BY	D. FASS 4-9-66		
GR LEADER	4/13		
VEH DES INT	4/13		
STRUCTURES	4/13	PROJ ENGR	4-19
STRUCTURES	Hilderman 4-14	REL GROUP	Botta 4-21-66
WEIGHTS	4-19		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

GUSSET
ASCENT STAGE ~ MID SECT. FUEL TANK
SHIELDING

SIZE B — CODE IDENT NO. 26512 — LDW280-10866 B

SCALE NONE — SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	CUST APPD
A	1	1.00 2.00 & 3.00					✓	EO A1	REMOVED EFF LEM-3 THRU LEM-6 FOR ALL DASH NOS. ADDED LDW280-10866-25 & REMOVED -17 & ADDED NOTES 2&3.	LEM-2(32) LEM-1(31)		-17	HERB. SCHWETER 9-6-66		
	2	1.00 2.00 & 3.00					✓	EO A2	ADDED -27	LTA-8(18)	NOT	REQD			
	3	3.00							IN F/D ON-15, -21 & -23 ADDED .097-.102 (#40) HOLE)						
	4	1.10						Ⓡ	SH 1.00 OF 4 WAS SH 1.00 OF 3 ADDED SH 1.10	NOTED					
B	1	1.00 & 1.10						EOB1	ON -15, -21, -23 & -25 ADDED LM-3 THRU LM-15 REQM'TS.	LM-15 THRU LM-3	NOT	REQ'D	G. WIEBER 10-30-68	BC	
	2	1.00 & 1.10					✓	LE0280-509	ON -21 & -23 ADDED PA-1 EFF.	PA-1					
	3	1.00					✓	LE0280-523 LCD19-1124	ADDED PA-1 (47) TO -15 & -25						
	4	1.00 & 1.01					✓	LE0280-731 LCD 2104	FOR -21 & -23 ADDED QUAL. TEST REQUIREMENTS	QUAL TEST					
	5	1.00					✓	LE0280-739 LCD 2104 Ⓡ	FOR -15 & -25 ADDED QUAL. TEST REQUIREMENTS						

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10866	B
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01 NAS 9-1100

LDW280-10867 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO. | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO. | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28226	LEM-6 (36)	1EA
↑	↑	LEM-5 (35)	↑
		LEM-4 (34)	
		LEM-3 (33)	
		LEM-2 (32)	
↓	↓	LEM-1 (31)	↓
LEM	LDW280-28226	LTA-8 (18)	1EA

PART NO. LDW280-10867-15 & -16

GAEC SCH NO. 30-

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -16

GRUMMAN REL INFO A

PRIM NO.	LE(001)		
215	MP-A	9-16-6	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM I
DOCUMENTATION TYPE II

DRAWN BY	E.ERICKSON 4-7-66	RELIABILITY	
LAYOUT BY	J.CALIGIURI.		
CHECKED BY	4-8-66		
GR.LEADER	4/13.		
VEH DES INT	4/13		
STRUCTURES	4/13	PROJ ENGR	4-19
STRUCTURES	4-14	REL GROUP	
WEIGHTS	4-19		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE-MID SECT-FUEL TANK
SHIELDING L.H.

SIZE B
CODE IDENT NO. 26512
LDW280-10867 A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00, 1.10 & 2.00						E.O. A1	IN B/M FOR -13 & -14 PROCESS SYMBOL T62 WAS NONE. (SH. 1.00 OF 4 WAS SH. 1.00 OF 3 ADDED SH. 1.10)	LEM 1 THRU 6 LTA-8	✓		P. Com 6-7-66		
	2	1.00, 1.10 2.00, 3.00							DELETED -13 & -14, ADDED -15 & -16	LTA-8 LEM-1,2,3,4,5 & 6		-13 & -14	J Gambella 9-22-66 WCG		

	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	PROJ ENGR	REL GROUP				
CHG APPROVED	A					9/27						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10867	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10867-16	E	BRACKET	AL ALY SHT	MIL-A-8920	2219-T81	.063x2 3/4x2 7/8	T62	76	
		LDW280-10867-15	E	BRACKET	AL ALY SHT	MIL-A-8920	2219-T81	.063x2 3/4x2 7/8	T62	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
76	ALODINE	LSP14-9010
T62	HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10867	A

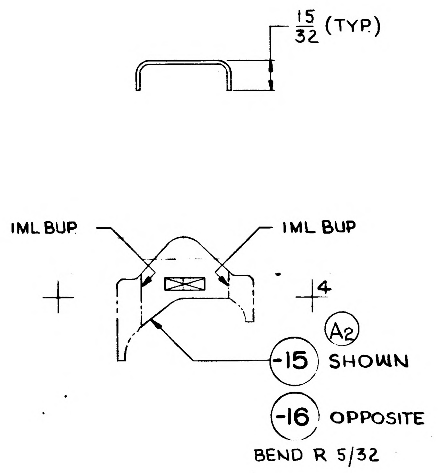
SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1-NO TOOLING HOLES PERMITTED IN PARTS.



MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	C	26512	LDW280-10867	A
	SCALE FULL			SHEET 3.00

LDW280-10867 A

FOR 2 PHOTO REPRODUCTION

01 NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. EO NO. LEO 280
EO NO. 290
CONTROL INFO NO. LDW280A-0134

REVISE EFF. OF ALL DASH NOS. ON FOLLOWING DRAWINGS TO READ:

DWG. NO. *	CHANGE NO.	EFF.	EFF. (WAS)
—	—	—	—
—	—	—	—
LDW280-10867	B1	LTA8(18) LM-1(31) & LM-2(32)	LTA8(18) LM-1-6 (31-36)
LDW280-10868	B1		
LDW280-10872	B1		
—	—	—	—
—	—	—	—
LDW280M10607	A1		
LDW280M10608	A1		
LDW280M10611	A1		
LDW280M10882	A1		
LDW280M10895	B4		
LDW280M10897	A1		
LDW280M10898	A1		
LDW280M10899	B1		
LDW280M10900	B1		
LDW280M10901	A1		
LDW280M10903	B2		
LDW280M10904	B1	LTA 8(18) LM-1(31) & LM2(32)	LTA-8 (18) LM 1-6 (31-36)

* USE APPLICABLE DASH No
IN DESCRIP OF EO

DETAIL SPEC REQ ☐	CL II ENGRG CHG ☑	CL I ENGRG CHG ☐	
REASON FOR EO: UPDATE DETAILS TO AGREE WITH N/A	DESCRIPTION OF EO: ON * EFF. LTA-8 (18), LM-1(31) & LM-2(32) WAS LTA-8(18), LM-1-6 (31-36)	GAEC EO RELEASE: 6 10/10	

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOTED	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
✓			✓	9/29/66	VDI				9/30		RMC(E) 10-8	Bott 10-7-66

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DWG.	LEO 280	290

ISSUED BY P. FRANZESE x1804 SECTION VDI GROUP NO. 335 PL 35 EMF

01

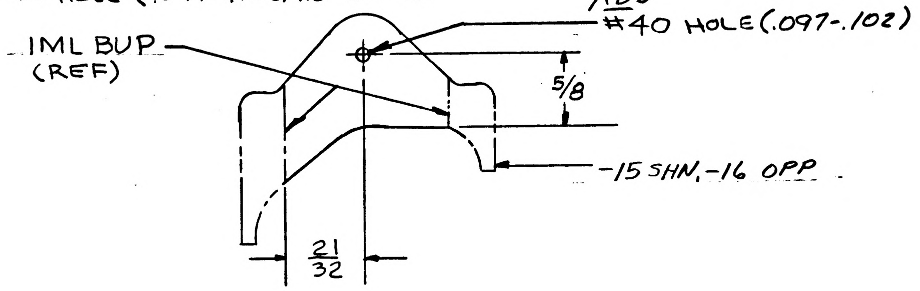
NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10867	EO NO. B2
CONTROL INFO NO. LDW280A3261	

IN F/D: ADD #40 HOLE (.097-.102) IN -15 & -16



IN M/B FOR -15 & -16
ADD

DASH #	N/A	EFF	# REQ'D
-15	LDW280-53226	LM-3(33) THRU LM-15(45)	1EA
-16	LDW280-53226		

PRE-C.F.II
12-6-66 3

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG	

REASON FOR EO
TOOLING REQUEST
UPDATE N/A & EFFECTIVITY

DESCRIPTION OF EO
IN F/D FOR -15 & -16
ADDED #40 HOLE (.097-.102)
IN M/B: ADDED LM-3(33) THRU LM-15(45) REQ'TS

GAEC EO RELEASE C
FR 12/6/66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8(18)	
LM		LM-1(31) TO	
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		-15 -16 ✓	

APPROVED BY		AB						
DATE	11/30/66	12/1/66		11/23	11/23		12-6-66	12-6-66
#3	VD1		RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	BRACKET A/S M/S FUEL TANK - SHIELDING - LH	LDW280-10867	B2

ISSUED BY M. SHAPIRO X1153 SECTION VD1 GROUP NO. 335 PL 35

01 NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 523
CONTROL INFO NO. LDW280A 5975

FOR THE FOLLOWING PARTS, ADD EFF ON PA-1 (WS), MODEL LM :

PART NO. *	CHG. NO.	N/A	REQD/MOD	NOMENCLATURE
LDW 280-53226-1	A3	LTM 280-26878	1	CAGE ASSY
-11263-11 -13 -15 -17 -19 -21 -23 -25 -27 -29 -11263-31	A1	LDW 280-53226	3 1 2 1	TUBE
-11264-11 -13 -15 -11264-17	A3		4 1 3 1	
-11265-11 -13 -15 -17 -19 -11265-21	A1		2	
-11266-13 -15 -17 -19 -21 -23 -27 -11266-29	A4		1	
-11267-11 -11267-13 -11267-15	A2		1 2	TUBE
-10865-15 -10865-17/-18 -10865-27	B4	LDW280-53226 LDW280-53878 LDW280-53226	12 1 EA 2 2	GUSSET PLATE
-10866-15 -10866-25	B3		2 1	
-10867-15 -10867-16	B3		1	
LDW 280				GUSSET PLATE
LDW280M 10608-1	A3		1	FITTING
M 10900-1 M 10900-2	B4		1 1	FITTING BKT
LDW280M 10903-3	B6	LDW 280-53226		
LDW280-11269-11	A3	LDW280-53878	1	TUBE
LDW 280-11475-15	A6	LDW 280-28858	2	CHANNEL
LDW 280-11275-29 -35	A3	LTM 280-26879 LDW280-53878	1 1	TUBE TUBE

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐ LCD19-1124 3

REASON FOR EO: TO ADD EFF REQMNTS

DESCRIPTION OF EO: ADDED PA-1 (WS) TO *

Ⓡ GAEC C EO RELEASE JK 3/27/7

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		PA-1 (WS)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK SCRAP NOT REQD
APPROVED BY
DATE 3/18/67
#5 VDI
SUPPORT
RELIAB. GROUP
GROUP LEADER
STRESS GROUP
LIAISON ENGRG
PROJ ENGRG RMC 3-21-67
~~GOVT~~ AC 3-23-67
PRIORITY C
DRAWING TITLE: NOTED ABOVE
DRAWING NO. LEO 280
EO NO. 523

ISSUED BY A. Richer / P. Henton 4392 SECTION VDI GROUP NO. 335 PL 35

LDW280-10868 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53231	QUAL TEST(70)	2 EA
		PA-1(47)	2 EA
		LM-15(45)	2 EA
		LM-14(44)	2 EA
		LM-13(43)	2 EA
		LM-12(42)	2 EA
		LM-11(41)	2 EA
		LM-10(40)	2 EA
		LM-9(39)	2 EA
		LM-8(38)	2 EA
		LM-7(37)	2 EA
		LM-6(36)	2 EA
		LM-5(35)	2 EA
		LM-4(34)	2 EA
	LDW280-53231	LM-3(33)	2 EA
	LDW280-28231	LM-2(32)	2 EA
	LDW280-28231	LM-1(31)	2 EA
LM	LDW280-28231	LTA-8(18)	2 EA
PART NO. LDW280-10868-11 & -13		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28231	LM-2(32)	2
LM	LDW280-28231	LM-1(31)	2
LM	LDW280-28231	LTA-8(18)	2
PART NO. LDW280-10868-23		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53231	QUAL TEST(70)	1EA
		PA-1(47)	1EA
		LM-15(45)	1EA
		LM-14(44)	1EA
		LM-13(43)	1EA
		LM-12(42)	1EA
		LM-11(41)	1EA
		LM-10(40)	1EA
		LM-9(39)	1EA
		LM-8(38)	1EA
		LM-7(37)	1EA
		LM-6(36)	1EA
		LM-5(35)	1EA
		LM-4(34)	1EA
	LDW280-53231	LM-3(33)	1EA
	LDW280-28231	LM-2(32)	1EA
	LDW280-28231	LM-1(31)	1EA
LM	LDW280-28231	LTA-8(18)	1EA
PART NO. LDW280-10868-25 & -27		GAEC SCH NO. 30-	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	B	B	B		B				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	—	GRUMMAN REL & INFO B	
LAST DASH NO. USED	-27	PRIM NO. 207	JK(001) ME-38 12/12/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 | LINE ITEM #1 | DOCUMENTATION TYPE II

DRAWN BY	R.COPPOLA	RELIABILITY	
LAYOUT BY	CALIGIURI		
CHECKED BY	E.G.W. 4-11-66		
GROUP LEADER	[illegible] 4/13		
VEH DES INT	[illegible] 4/13		
STRUCTURES	[illegible] 4/14	PROJ ENGR	[illegible] 4-19
STRUCTURES	[illegible] 4-14	REL GROUP	E. Caramenico 4-21-66
WEIGHTS	[illegible] 4-19		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE - MID-SECT-LH & RH - THER. SHIELDING

SIZE	CODE IDENT NO.		
B	26512	LDW280-10868	B
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.10, 2.00 3.00						EO A1	SH 1 OF 4 WAS SH 1 OF 3 ADDED SH 1.10 FOR -15, -17 IN PROCESS COLUMN, T62 WAS 'NONE'. ADDED NOTE 2. REMOVED FROM COML SPEC COLUMN 2219-T81	NOTED	-15, -17		MELMED 6-29-66		
	2	1.00							IN EFF. COLUMN -11 & -13 WAS 1EA REQD		NOT	REQD	M		
	3	1.00, 1.10 2.00, 3.00					✓		IN FIELD, B/M & MOD/BLK REMOVED -15 & -17 ADDED -19 & -21	NOTED		-15 -17	O'NEILL RMS 7/26/66		
	4	1.00, 1.10, 2.00, 3.00							IN FIELD OF DWG & B/M ADDED -23	NOTED	NOT	REQD	DAGOSTO 8-18-66 RMS		
B	1	1.00					✓	LE0280-290	ON -11, -13, -19, -21, -23 EFF. LTA-8(18), LM-1(31) AND LM-2(32) WAS LTA-8(18), LM 1-6(31-36)	LTA-8(18) LM-1(31) THRU LM-6(36)		✓	J. LONGO 12-10-68		
	2	1.00 2.00 3.00					✓	EO B2	IN F/D AND M/B REMOVED -19 AND -21 AND NOTE 2 IN F/D AND M/B ADDED -25 AND -27	LTA-8(18) LM-1(31) LM-2(32)		-19 -21			
	3	1.00 3.00					✓	EO B3	1) IN F/D FOR -25 & -27 ADDED .097-.102 (#40 HOLE) 2) IN M/B ADDED LM-3(33) TO LM-15(45) REQTS	LTA-8(18) LM-1(31) THRU LM-15(45)	✓				
	4	1.00					✓	LE0280-509 LCD1124	ON -11, -13, -25, -27: ADDED PA-1 EFF	PA-1(47)	NOT	REQD			
	5	1.00					✓	LE0280-731 LCD2104	FOR -11, -13, -25, -27: ADDED QUAL TEST REQUIREMENTS	QUAL TEST (70)	NOT	REQD	E.C.G.		

CHG APPROVED

LTR	GROUP LDR	VEL DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY
A	9/2				9/27	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10868	B

SCALE NONE

SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10868-23	E	PLATE	AL ALLOY SH	MIL-A-8920	2219-T81	.040×1¾×1⅞	NONE	76	
		-27	↕	BRACKET	↕	↕	↕	.040X 3×3	↕	↕	
		-25		↕				.040X 2X3			
		-13						.063×1¾×2			
		LDW280-10868-11	E	BRACKET	AL ALLOY SH	MIL-A-8920	2219-T81	.063×1¾×1¾	NONE	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10868	B

SCALE NONE

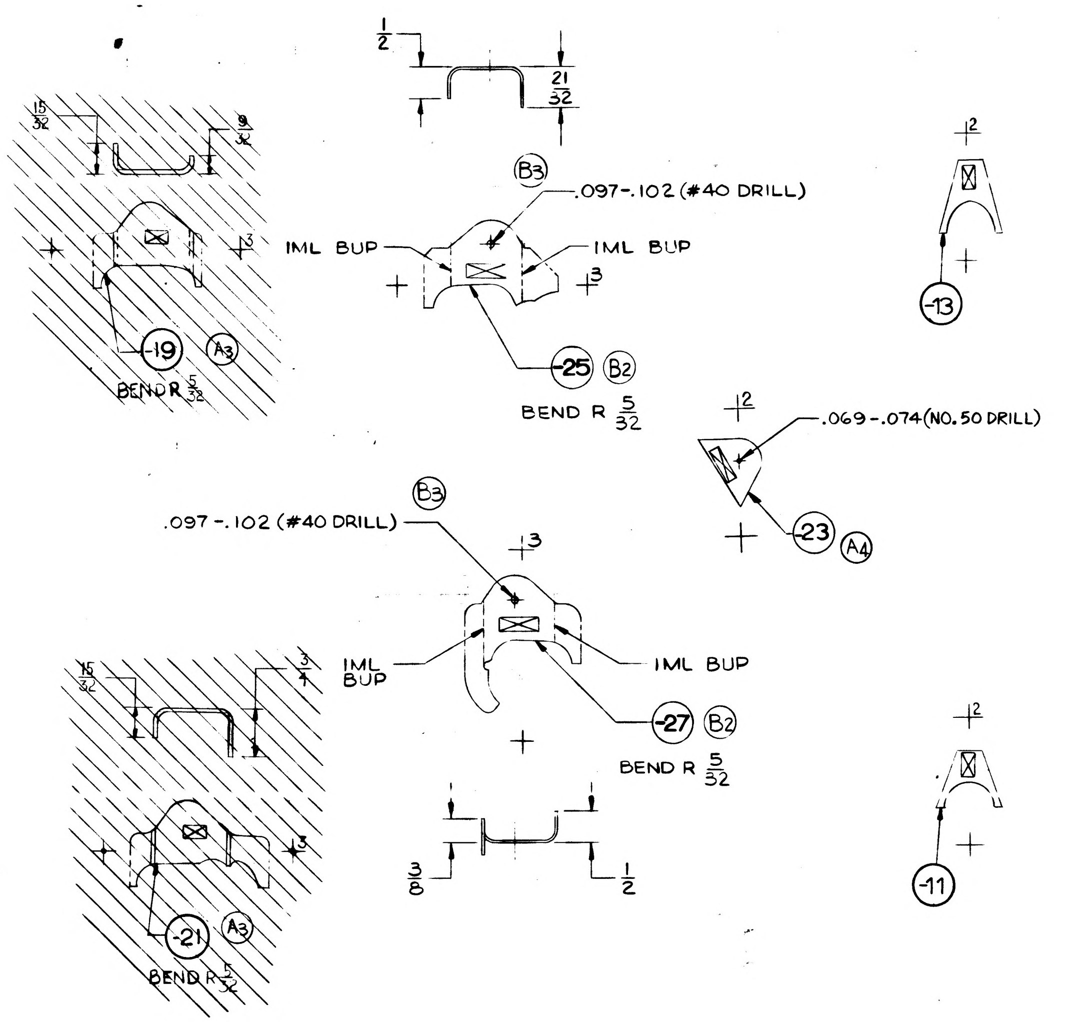
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

LDW280-10868 B



1/2
21/32
15/32
9/32
3
-19
A3
BEND R 5/32
B3
.097-.102 (#40 DRILL)
IML BUP
IML BUP
3
-25
B2
BEND R 5/32
2
-13
2
.069-.074 (NO. 50 DRILL)
-23
A4
B3
.097-.102 (#40 DRILL)
3
IML BUP
IML BUP
-27
B2
BEND R 5/32
15/32
3/4
3
-21
A3
BEND R 5/32
3/8
1/2
2
-11

NOTES:

1) NO TOOLING HOLES PERMITTED IN PARTS.

2) ~~2219-T81 TO BE ANNEALED BEFORE FORMING & REHEAT TREATED TO T62 PER MIL-H-6088~~

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE. L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-10868	B
	SCALE FULL		SHEET 3.00	

ENG 73-3 6-64

2 FOR PHOTO REPRODUCTION 1 K2

		LDW280-10870-11	E	FOIL	SEE NOTES 8-12.2							
QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10870	B

SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

ASCENT STAGE
TEMPERATURE CONTROL FINISHED ALUMINUM FOIL
NOTES 1 THRU 7 DELETED

8.0 Scope: This drawing specifies the requirements for a temperature control coating finished metal foil to be used for the construction of the exterior surfaces of the LM

9.0 Applicable Documents: MIL-C-5541; Chemical Films for Aluminum Alloys
QQ-A-250/4; Sheet and Plate, 2024

10.0 Requirements:

10.1 Description: The temperature control finished foil shall consist of a aluminum alloy foil substrate finished on one side with a multi-layer vacuum deposited coating.

10.2 Aluminum Alloy Foil: The aluminum alloy foil shall be alloy 2024-T81. The chemical composition shall be in accordance with QQ-A-250/4. The minimum mechanical properties shall be as follows: tensile ultimate strength 60,000 psi minimum, tensile yield strength 55,000 psi minimum. The foil shall be 0.004" ±10% thick and shall be cut into sheets 24 ±1/4" wide and 120 ± 1/2" long. Prior to the application of the vacuum deposited coating, the foil shall be finished with a chromate chemical conversion coating, alodine 1200, in accordance with MIL-C-5541.

10.3 Temperature Control Coating: The temperature control coating shall be a multi-layer vacuum deposited coating applied to one side of the aluminum foil substrate. The coating shall consist of a layer of pure aluminum overcoated with a layer of silicon oxide. The pure aluminum layer shall be 1400 to 3000 Angstrom units in thickness. The silicon oxide layer shall be of a thickness necessary to achieve the specified radiative characteristics, (approximately 18,000 Angstrom units).

10.4 Radiative Properties: The temperature control finished surface of the aluminum foil shall possess a solar absorptance of 0.25±0.03, a total hemispherical emittance, at 100°F, of 0.55±0.05 and a solar absorptance to emittance ratio, at 100°F, of 0.45±0.05. The measurement of radiative properties shall be in accordance with para. 11.1.

11.0 Quality, Assurance Provisions:

11.1 Measurements of Radiative Properties: The vendor shall measure the solar absorptance and the total hemispherical emittance of each sheet of material prior to its shipment. A minimum of three measurements of solar absorptance and of total hemispherical emittance shall be made on the finished surface of each sheet. The arithmetic average of three measurements of each property shall be within the tolerances specified for that property. Vendor equipment utilized for the measurement of radiation properties shall be calibrated against standards that shall have been evaluated by GAEC. The vendor shall supply samples of temperature control finished aluminum foil to GAEC for evaluation as calibration standards. The samples shall possess solar absorptance properties within the tolerances specified in para. 10.4 and shall possess total hemispherical emittance properties at the extremes of the tolerances specified in para. 10.4

12.0 Preparation for Delivery:

12.1 Identification Marking: The temperature control coating finished aluminum foil material, shall be identified by marking the appropriate part number on a narrow low tack pressure sensitive adhesive tape. After removal, the tape shall not leave a residue on the temperature control coating surface. The tape shall have the appropriate part number marked on its surface at an interval of at least one part number per lineal foot. The tape shall be applied to the coated surface of the aluminum foil in one continuous strip along both 120" long edges of the sheet.

12.2 Packaging: The temperature control coating finished aluminum foil sheet material shall be packaged in wooden containers in such a manner as to prevent damage during shipment. Individual sheets shall be backed with 0.005" thick polyster film and then packaged with 1/4" thick polyurethane foam sheets. Sheets shall be packaged no more than 55 per container, and each part number shall be packaged in a separate container.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10870	B
SCALE		SHEET 3.00	

ENG 73.1 6-64

SUPERSEDES LDW280-10870 REV A 8-8-66 SH. 3

01 NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-10824	LM-2(32)	1
↑	LDW280-10824	LM-1(31)	1
	LDW280-10948	LM-4(34)	1
		THRU	
	LDW280-10948	LM-1(31)	1
	LDW280-10772	LM-3(33)	1
		THRU	
	LDW280-10772	LM-1(31)	1
	LDW280-10823	LM-2(32)	2
	LDW280-10823	LM-1(31)	2
	LDW280-10945	LM-3(33)	1
		THRU	
	LDW280-10945	LM-1(31)	1
	LDW280-10612	LM-3(33)	1
		THRU	
	LDW280-10612	LM-1(31)	1
↓	LDW280-10610	LM 4(34)	1
		THRU	
LM	LDW280-10610	LM 1(31)	1

PART NO. LDW280-10870-11 — GAEC SCH NO. 30-

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LTM280-26957	PR-1	1
↑	LTM280-26956	PR-1	1
	LTM280-26955	PR-1	1
	LDW280-11734	LM-4(34)	1
	LDW280-11734	LM-3(33)	1
	LDW280-11344	LM-4(34)	1
		THRU	
	LDW280-11344	LM-1(31)	1
	LDW280-11654	LM-3(33)	1
	LDW280-11691	LM-7(37)	2
	LDW280-11691	LM-3(33)	2
	LDW280-11683	LM-7(37)	2
	LDW280-11683	LM-3(33)	2
	LDW280-11681	LM-7(37)	2
	LDW280-11681	LM-3(33)	2
	LDW280-10774	LM4 (44)	2
		THRU	
	LDW280-10774	LM-1(31)	2
	LDW280-11173	LM-4(34)	4
		THRU	
	LDW280-11173	LM-1(31)	4
↓			
LM			

PART NO. LDW280-10870-11 CONTINUED — GAEC SCH NO. 30-

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM.	LDW280-11451	LM-2(32)	
LM	LDW280-11449	LM-2(32)	
↑	LDW280-11448	↑	
	LDW280-11447		
	LDW280-11446		
	LDW280-11445		
	LDW-280-11443		
	LDW280-11440		
	LDW280-11439		
	LDW280-11437		
	LDW280-11434		
	LDW280-11428	↓	
	LDW280-11427	LM-2(32)	
	LDW280-11451	LM-1(31)	
	LDW280-11449	↑	
	LDW280-11448		
	LDW280-11447		
	LDW280-11446		
	LDW280-11445		
	LDW280-11443		
	LDW280-11440		
	LDW280-11439		
	LDW280-11437		
	LDW280-11434		
↓	LDW280-11428	↓	
LM	LDW280-11427	LM-1(31)	

PART NO. LDW280-10870-11 CONTINUED — GAEC SCH NO.

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	1.11	2.00	300					
REV	C	C	C	B	B					
SHEET	1.01		1.12							
REV	C		C							
SHEET										
REV										

LAST SECT LTR USED —

LAST DASH NO. USED -11

GRUMMAN REL INFO

PRIM NO. 215 — JK(00.1 ME-16 C-1/18/9

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM ≈ 1
DOCUMENTATION TYPE II

DRAWN BY R. COPPOLA
LAYOUT BY P. HENTON
CHECKED BY 3-14-66
GROUP LEADER 3-14-66
VEH DES INT 3/15/66
STRUCTURES 3/15
STRUCTURES 3-15
WEIGHTS 3-16
MATERIALS F. D. 3/15/66
PROJ ENGR 3/16
REL GROUP

(R) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

FOIL
TEMPERATURE CONTROL FINISHED
ASCENT STAGE

SIZE B
CODE IDENT NO. 26512
LDW280-10870 C
SCALE NONE
SHEET 100 OF 6

ENG 77.1 9-64

CDR REV C 1-8-69

01

NAS 9-1100

LDW280-10870 C

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-14478	LM-4(34)	2
	LDW280-14478	LM-3(33)	2
	LDW280-14477	LM-4(34)	1
	LDW280-14477	LM-3(33)	1
	LDW280-14476	LM-4(34)	2
	LDW280-14476	LM-3(33)	2
	LDW280-14470	LM-4(34)	2
		THRU	
	LDW280-14470	LM-1(31)	2
	LDW280-14469	LM-4(34)	2
		THRU	
	LDW280-14469	LM-1(31)	2
	LDW280-14468	LM-2(32)	2
	LDW280-14468	LM-1(31)	2
	LDW280-14467	LM-2(32)	1
LM	LDW280-14467	LM-1(31)	1
PART NO. LDW280-10870-11 CONTINUED		GAEC SCH NO.	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET
REV
SHEET
REV
SHEET
REV

LAST SECT LTR USED
~~LAST DASH NO. USED~~

GRUMMAN REL INFO
PRIM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES

~~ORIG DWG AUTH~~
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO.
LINE ITEM
~~DOCUMENTATION TYPE~~
DRAWN BY
LAYOUT BY
CHECKED BY
PROJ ENGR
REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-10870 C
SCALE NONE
SHEET 1.01 OF

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
A	1	2.00, 3.00					✓	EO A1	ADDED SH 1.10, SH 1 OF 4 WAS SH 1 OF 3. ADDED NOTES 6 & 7	LTA-8 & LEM-1 THRU-6	NOT	REQD	MONICO 8-8-66		
	2	1.00,		(R)			✓	EO A2	FOR-11 REMOVED LTA-8 EFFECTIVITY	LTA-8		✓ RL			
B	1	1.00					✓	EO B1	IN M/B FOR -11 ADDED N/A LDW280-11427, -11428, -11434, -11437, -11439, -11440, -11443, -11445, -11446, -11447, -11448, -11449, & -11451.	LM-1(31) LM-2(32)	NOT	REQ'D	G. DAVIS 13 OCT 66	[illegible]	[illegible]
	2	2.00 3.00							RETRACED SH 3.00. REMOVED NOTES 1 THRU 7 & ADDED NOTES 8 THRU 12.2.		NOT	REQ'D			
	1	1.00					✓	EO C1	IN M/B ON-11 REMOVED N/A LDW280-14363 THRU LDW280-14367, EFF LM-1(31) THRU LM-6(36). IN M/B ON-11 ADDED LDW280-14467, LM-1(31), LM-2(32), 1 REQ. LDW280-14468, LM-1(31), LM-2(32), 2 REQ. LDW280-14469, LDW280 14470, LM-1(31) THRU LM-15(45) 2 REQ. LDW280-14476, LDW280 14478, LM-3(33) THRU LM-15(45) 2 REQ. LDW280-14477, LM-3(33) THRU LM-15(45), 1 REQ.	LM-1(31) THRU LM-15(45)	NOT	REQ'D	R. J. PRIZZI 7-9-68		
C	2	1.00					✓	EO C2	IN M/B FROM -11 EFF ▲ LM-1(31), LM-2(32) & LM-3(33) REMOVED N/A LDW280-10612 (1), 10945 (1) & 10772 (1). IN M/B FROM -11 EFF ● LM-1(31) & LM-2(32) REMOVED N/A LDW280-10823(1) 10824 (3) (WAS 1 REQ). IN M/B ADDED TO-11 EFF ■ LM-1(31) THRU LM-15(45): LDW280-10612(2), 10774(2) 10823(2), 10945(2) & 11173(4) & 10772(5). IN M/B ADDED TO-11 EFF ◎ LM-3(33) THRU LM-15(45): N/A LDW280-11681(2), -11683(2), -11691(2), -11734(1) & -10824(2).	LM-1(31) THRU LM-15(45)	NOT	REQ'D			
	3	1.00						EO C3	FROM-11: DELETED N/A LDW280-10733, 10928, 10942, 10780, 10943, 10944, 10949, 28173, 10781, 10950, 10951, 10777, 10779 & 28164. TO -11: ADDED EFF. LM-7(37) THRU LM-15(45) TO LDW280-10610, 10946, 10947, 10948, CONT'SH.1.11	LM-1(31) THRU LM-15(45)	NOT	REQ'D	L.D.		

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	MATERIALS				
A										
B										
C										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10870	C
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
	3	1.00							NO. REQ'D IDENTICAL TO LM-6 REQ. TO-11 ADDED N/A LDW280-11344 FROM LM-1(31) THRU LM-15(45) 1 UNIT/MOD. ADDED SH. 1.11	LM-1 THRU LM-15(45)	NOT	REQ'D	R. J. PRIZZI 12-6-68 L.D.		
	4	1.00					✓	EO C4	FOR-11 REMOVED N/A LDW280-10946, LDW280-10947 ALL EFF: 1 REQ'D.	LM-1 THRU LM-6	NOT	REQ'D			
C	5	1.00						EO C5	REMOVE N/A FROM-11, LDW280-10823, LDW280-10824, LM-3 THRU LM-6 1 REQ. LDW280-10772, LDW280-10945, LDW280-10612 LM-4 THRU LM-6 1 REQ. LDW280-28160, LDW280-28161, LDW280-28163 LM-1 THRU LM-6 ADDED SH. 1.01	LM-1 THRU LM-6		✓			
	6	1.00					✓	LEO280-729 LCD 1963	ON-11, N/A LTM280-26955 LTM280-26956, LTM280-26957 ADDED PR-1 EFF.	PR-1	NOT	REQ'D			
	7	1.00					✓	EO C7	FOR-11 ADDED LDW280-11654 1 REQ'D TO M/B FOR LM-3	LM-3(33)	NOT	REQ'D			
	8						✓		REF: EO C2 IN MOD/BLK FROM-11 EFF. ▲ LM-1 THRU LM-3 REMOVED N/A LDW280-10612(1), LDW280-10945(1) & LDW280-10772(1) SHOULD BE LM-1 THRU LM-6. IN MOD/BLK, FROM-11 EFF ● LM-1 & LM-2 REMOVED N/A LDW280-10823(1) REQ'D SHOULD BE EFF LM-1 THRU LM-6. N/A LDW280-10824 EFF LM-3 THRU LM-15(2) REQ'D SHOULD BE. EFF LM-1 THRU LM-15 (2) REQ'D.	LM-1 THRU LM-15	NOT	REQ'D	R. J. PRIZZI 12-6-68		
	9	1.00					✓		REF: EOC4, IN DESCRIPTION EFF. IN EFF BLOCK LM-1 THRU LM-6 SHOULD BE LM-1 THRU LM-15.	LM-1 THRU LM-15	NOT	REQ'D			
	10	1.00							REF: EOC5 REMOVE THE FOLLOWING N/A FROM-11 LDW280-10823, LDW280-10824 LM-3 THRU LM-6 SHOULD BE LM-3 THRU LM-15. LDW280-10772, LDW280-10945 45, LDW280-10612, LM-4 THRU LM-6 SHOULD BE LM-4 THRU LM-15. IN DESCRIPTION, EFF, IN EFF BLK LM-1 THRU LM-6 SHOULD BE LM-1 TO LM-15. REMOVED ▲ & ● FROM MOD/BLK EFF TO SUIT FOR CLARITY.	LM-1 THRU LM-15		✓			

FOR CONTINUATION OF REVISIONS SEE SHEET 1.12

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10870	C
SCALE NONE		SHEET 1.11	

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
C	11	1.00		(R)		✓		LCD 3309 CCA 1339 ECP M-099R	IN M/B ON -11 REMOVED N/A LDW280-10610(1), 10948 (1), 11173 (4), 10774 (2), 11344(1), 11734(1), 14469 (2), 14470 (2), 14476 (2), 14477(1), & 14478 (2). EFF. LM-5(35) THRU LM-15(45). IN M/B ON -11 REMOVED N/A LDW280-11681(2), 11683(2), & 11691(2). EFF. LM-8(38) THRU LM-15(45). (ADDED SH 1.12) W. Murphy C8 THRU C11	LM-5 THRU LM-15 R.E. LM6		✓ 1/18/69		1/14/69	

CHG APPROVED LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	MATERIALS	THERMO			
A										
B										
C	1/7/69	1/6/68	CL 1/13/69	1/13/69			NMR 1/8/68			

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10870	C
SCALE NONE		SHEET 1.12	

ENG 77.3 5-65

01

NAS 9-1100

LDW280-10872 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28051	LEM-2 (32)	1EA
LEM	LDW280-28051	LEM-1 (31)	1EA
LEM	LDW280-28051	LTA-8 (18)	1EA
PART NO. LDW 280-10872-29 & -25		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28074	LEM-2 (32)	1EA
LEM	LDW280-28074	LEM-1 (31)	1EA
LEM	LDW280-28074	LTA-8 (18)	1EA
PART NO. LDW 280-10872-15, -17 & -27		GAEC SCH NO. 30	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A		
		PRIM NO.	LE(001)	
LAST DASH NO. USED	-19	215	MP-14	A-11-2-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.010 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	CARSTENSEN 6-15-66	RELIABILITY	
LAYOUT BY	J. CALIGIURI 6-23-66		
CHECKED BY	D. FASS 6-20-66		
GROUPLEADER	[illegible] 6/23		
VEH DES INT	[illegible] 7/6/23		
STRUCTURES	[illegible] 7/6	PROJ ENGR	[illegible] 7-22
STRUCTURES	Hilderman 7/6	REL GROUP	Botte 7-26-66
WEIGHTS	[illegible] 7-19		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE ~ MID SECTION
THERMAL SHIELD SUPPORT - L.H. SIDE

SIZE B
CODE IDENT NO. 26512
LDW280-10872
A
SCALE NONE
SHEET 1.00 OF 4

12-65

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~[illegible]~~ APPD
											REWORK	SCRAP			
A	1	1,1.10, 2&3	5C				✓	E.O. A1	REMOVED -13 ADDED -21, N/A OF -11, -15 & -17 LDW280-28074 & N/A OF -19 LDW280-28051 WAS LDW280-28155. ADDED SH 1.10 SH 1 OF 4 WAS 1 OF 3.	LTA-8, LEM 1, & LEM 2		-13	J. GEIER 9-10-66		
	2	1,1.10,2&3	5C,5B 6D					E.O. A2	ADDED -23 & -25; DELETED -19 & -21 & -11 ADDED -27 REWORKED -17 (4) HOLES WAS (3)		-17	-11, -19 -21 S.J.			
	3	1,1.10&3	5C						① REMOVED -23, ADDED -29 FOR EFF: LTA-8, LEM-1 & 2.	NOTED		-23 S.J.	ZALETEL 9-21-66	KMC	

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	REL GROUP
A	10/4					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10872	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10872-25	E	DOUBLER	AL ALLOY SH	QQ-A-250/12	7075-T6	.020 × 1 3/8 × 6	NONE	76	
							7075				
		LDW280-10872-17		CLIP				.040 × 2 × 3 1/4	T6		
		LDW280-10872-15		CLIP				.040 × 1 3/4 × 1 7/8	T6		
		LDW280-10872-29		BRACKET				.080 × 5 1/4 × 10 5/8	T6,CM		
		LDW280-10872-27	E	BRACKET	AL ALLOY SH	QQ-A-250/12	7075	.071 × 5 3/8 × 8 7/8	T6,CM	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	AL HEAT TREAT	MIL-H-6088
76	ALODINE	LSP14-9010
CM	CHEM-MILLING	LSP14-26100

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10872	A

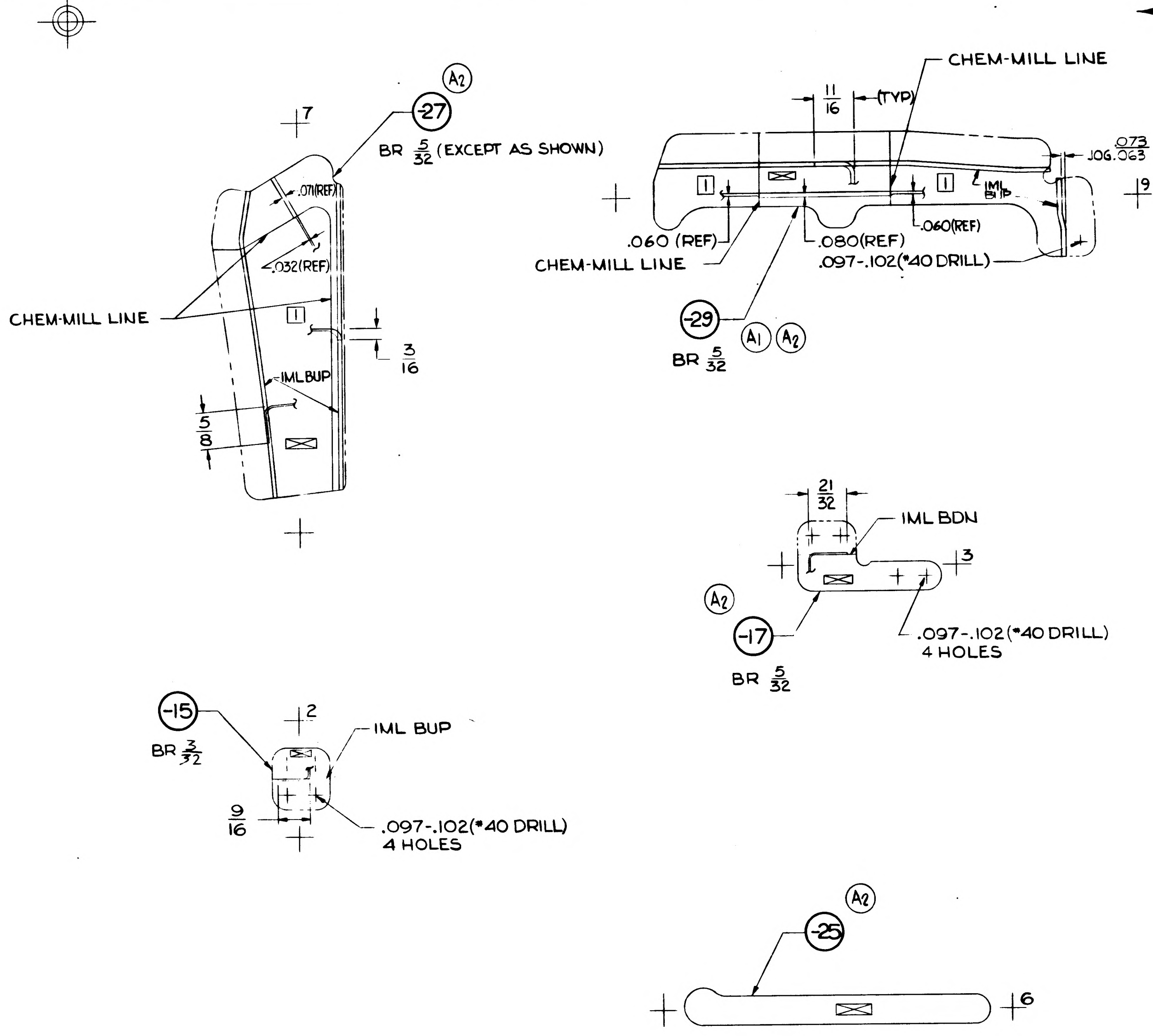
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



20
20
CHEM-MILL LINE
11/16
(TYP)
.073/.063
JOG
9
.060 (REF)
.080(REF)
.060(REF)
IML BUP
CHEM-MILL LINE
.097-.102(#40 DRILL)
-29
A1
A2
BR 5/32
A2
-27
BR 5/32 (EXCEPT AS SHOWN)
7
.071(REF)
.032(REF)
CHEM-MILL LINE
3/16
IML BUP
5/8
21/32
IML BDN
3
A2
-17
BR 5/32
.097-.102(#40 DRILL)
4 HOLES
-15
BR 3/32
2
IML BUP
9/16
.097-.102(#40 DRILL)
4 HOLES
A2
-25
6

NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS.

LDW280-10872-27

CHEM-MILL LINE TOLERANCE:
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
1	.032 ±.005	.039(REF)

LDW280-10872-29

CHEM-MILL LINE TOLERANCE:
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
1	.060±.005	.020(REF)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ✓ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-10872	A

SCALE FULL
SHEET 3.00

LDW280-10872 A

FOR PHOTO RE1PRODUCTION

01 NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. EO NO. LEO 280
EO NO. 290
CONTROL INFO NO LDW280A-0134

REVISE EFF. OF ALL DASH NOS. ON FOLLOWING DRAWINGS TO READ:

DWG. NO. *	CHANGE NO.	EFF.	EFF.** (WAS)
—	—	—	—
—	—	—	—
LDW280-10867	B1	LTA8 (18) LM-1(31) & LM2(32)	LTA8(18) LM-1-6 (31-36)
LDW280-10868	B1		
LDW280-10872	B1		
—	—	—	—
—	—	—	—
LDW280M10607	A1		
LDW280M10608	A1		
LDW280M10611	A1		
LDW280M10882	A1		
LDW280M10895	B4		
LDW280M10897	A1		
LDW280M10898	A1		
LDW280M10899	B1		
LDW280M10900	B1		
LDW280M10901	A1		
LDW280M10903	B2		
LDW280M10904	B1	LTA-8 (18) LM-1(31) & LM2(32)	LTA-8 (18) LM1-6 (31-36)

* USE APPLICABLE DASH No IN DESCRIP OF EO

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG							
REASON FOR EO: UPDATE DETAILS TO AGREE WITH N/A				DESCRIPTION OF EO: ON * EFF. LTA-8 (18), LM-1(31) & LM-2(32) WAS LTA-8(18), LM-1-6 (31-36)							GAEC EO RELEASE: 10/10
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG ✓	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP ✓	APPROVED BY / DATE: 9/29/66	VDI 9/29	SUPPORT	RELIAB. GROUP
									GROUP LEADER 9/	STRESS GROUP 9/30	LIAISON ENGRG
									PROJ ENGRG RMC 10-8	10-7-66	
LM		NOTED		PRIORITY: C	DRAWING TITLE: SEE DWG.				DRAWING NO.: LEO 280		EO NO.: 290

ISSUED BY P. FRANZESE x1804 SECTION VDI GROUP NO. 335 PL 35 EMF.

01
NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW280-10872 | EO NO. B2
CONTROL INFO NO. LM-5-11299

REMOVE -23 & -25

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☐

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
AREA REDESIGNED NO LONGER REQUIRING THESE PARTS	REMOVED -23 & -25	C ✓

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8(18)	
		LM-1(31)	
		LM-2(32)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓			-23 -25
REVISE DWG	RECORD EO	REWORK	SCRAP

APPROVED BY	WT			~	12-7-66			
DATE	12/7/66			~		12-7-66	12-12-66	12-8-66
1	VD1	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	BRACKET A/S M/S LH THERMAL SHIELD	LDW280-10872	B2

ISSUED BY HENTON/TRAUT X1441 SECTION VD1 GROUP NO. 335 PL 5

01

NAS 9-1100

B

ENG 32.1 REV 3-66

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10872
EO NO. B3
CONTROL INFO NO. LDW280A-5763

THIS EO IS A REVISION OF EO B2

REMOVE -29 & -25

WAS

REMOVE -23 & -25

THIS EO CANCELS CHANGE #B, ON LEO 280-290

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

REASON FOR EO: TO CORRECT CALLOUTS ON EO B1 & B2

DESCRIPTION OF EO: REF EO B2
REMOVE -29 & -25 WAS REMOVE -23 & -25
CANCELLED B, CHANGE ON LEO 280-290

GAEC C EO RELEASE: JK 3/13/7

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8 (18)	
		LM-1 (31)	
		LM-2 (32)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG	RECORD EO	REWORK	SCRAP
✓		NOT REQ'D	

APPROVED BY				—				
DATE	3/2/67			—	3/3		3-1-67	3-13-67
1	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C
DRAWING TITLE: BRACKET A/S M/S THERMAL SHIELD SUPPT LH SIDE
DRAWING NO.: LDW280-10872
EO NO.: B3

ISSUED BY M. SHAPIRO X1153 SECTION VDI GROUP NO. 335 PL 35

01 NAS 9-1100

LDW280-10878 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
L M	LDW280-53162	QUAL TEST(72)	1 EA
		LM15(45)	1 EA
		LM14(44)	1 EA
		LM13(43)	1 EA
		LM12(42)	1 EA
		LM11(41)	1 EA
		LM10(40)	1 EA
		LM9(39)	1 EA
		LM8(38)	1 EA
		LM7(37)	1 EA
		LM6(36)	1 EA
		LM5(35)	1 EA
		LM4(34)	1 EA
	LDW280-53162	LM3(33)	1 EA
	LDW280-28162	LM2(32)	1 EA
	LDW280-28162	LM1(31)	1 EA
L M	LDW280-28162	LTA-8 (18)	1 EA
PART NO. LDW280-10878-22		GAEC SCH NO. 30	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28162	QUAL TEST (72)	1EA
LM	LDW280-28162	LM 2(32)	1EA
LM	LDW280-28162	LM-1(31)	1EA
LM	LDW280-28162	LTA-8(18)	1EA
PART NO. LDW280-10878-21		GAEC SCH NO. 30	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL^{C} INFO B		
		PRIM NO.	J5(001)	
LAST DASH NO. USED	-22	215	MP 14 B	3-31-7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ± 1°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	R GORTLER 4-20-66	RELIABILITY	
LAYOUT BY	R. GORTLER		
CHECKED BY			
GR. LEADER	P Henton 4-22		
VEH. DES. INT	W. Bischoff 4-22		
STRUCTURES	F. Bunce 4-25	PROJ ENGR	J Alber 4-28
STRUCTURES	R Hilderman 4-25	REL GROUP	A Caramanica 5-2-66
WEIGHTS	D Robesch 4-27		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BEAM.
ASCENT STAGE ~ MID. SECT. Z10.25
LOWER THERMAL SHIELD

SIZE	CODE IDENT NO.		
B	26512	LDW280-10878	B
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

SUPERSEDES LDW280-10878 REV NONE 8-2-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	CUST APPD
											REWORK	SCRAP			
									RETRACED NO CHG LAST REV NC. LOFTED DWG WAS DIMENSION DWG. SH 1 OF 4 WAS 1 OF 1. ADDED SH 1.10, 2.00 & 3.00	J Gardella					
A	1	1.00, 1.10, 2.00, 3.00						EO A1	DELETED -11 & -12, ADDED -15 & -16	LTA-8 LEM-1, -2,-3,-4,-5 & -6		-11 & -12	J Gardella MULLEN		
	2							EO A2	DELETED -15 & -16, ADDED -17 & -18			-15 & -16			
	3								DELETED -17 & -18, ADDED -19 & -20	NOTED		-17 & -18			
B	1	1.00, 2.00 &						EO B1	REMOVED -19 & -20 AND ADDED -21 & -22	LTA8(18), LM		-19 & -20	R. BUCARIA 3-15-67		
	2	3.00						EO B2	REVISED TRIM OF -21 & -22	1(31) & LM2(32)	✓				
	3	1.00					✓	LEO 280-364	ON -21 & -22 ADDED "QUAL TEST."	QUAL TEST	NOT	REQD			
	4						✓	LEC 280-380	FOR -22 ADDED LM3(33) THRU LM15(45)						
	5	2.00						LEO 280-398	ON INCORPORATION OF E O B2, FINISH 76 WAS FINISH 88	LTA-8	✓				
	6	3.00						EO B6	REF. EO B2, 1/8R WAS 1/32 R	LM-1 THRU LM-15	✓				
	7	1.00						Ⓡ	REF. EO B6, EFF. SHOULD INCLUDE "QUAL TEST"	QUAL TEST	NOT	REQD			

FOR CONTINUATION OF REVISIONS SEE SHEET

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10878	B
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10878-22	E	BEAM	AL ALLOY SH.	QQ-A-250/12	7075	.080×7⅛×21½	CM,T6	76	
		LDW280-10878-21	E	BEAM	AL ALLOY SH.	QQ-A-250/12	7075	.080×7⅛×21½	CM,T6	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						CM	CHEM-MILL	LSP14-26100
						T6	AL HEAT TREAT	MIL-H-6088
						76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10878	B
SCALE NONE			SHEET 2.00

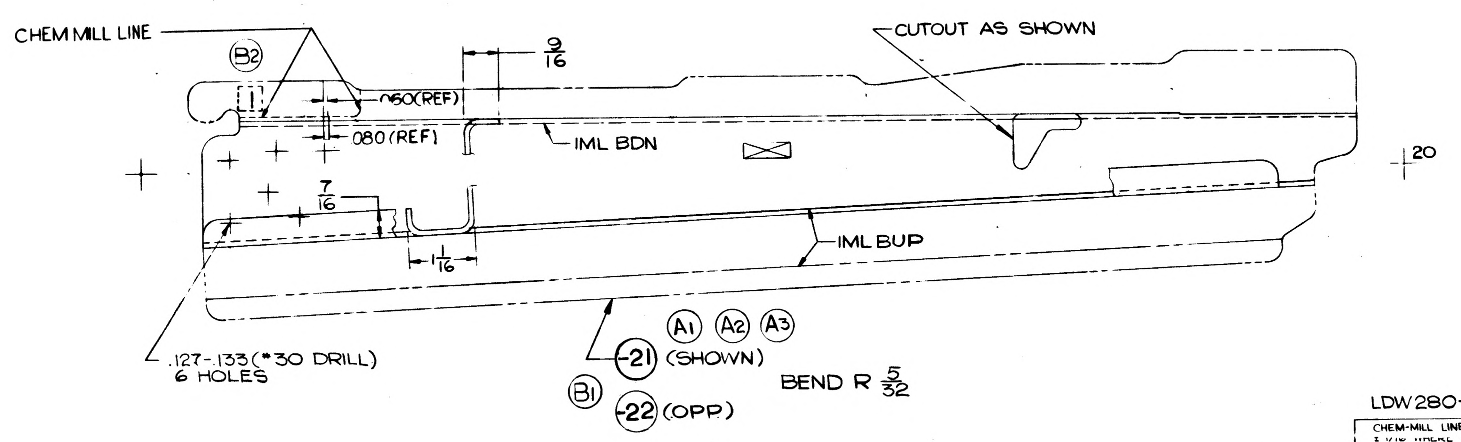
ENG 77.2 7-65

01

NAS 9-1100

LDW280-10878B

NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS.



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-10878-21 & -22

CHEM-MILL LINE TOLERANCE:
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	.060 +.005 -.000	.020 REF

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
	SIZE D	CODE IDENT NO. 26512	LDW280-10878 B
MODEL OR END ITEM LM	SCALE FULL		SHEET 3.00

FOR PHOTO 1 REPRODUCTION

LDW280-10878B

01 NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEE NG ORDER

DWG. NO. LEO 280
EO NO. 512
CONTROL INFO NO. LDW280/-5723

FOR THE FOLLOWING DWG'S LISTED BELOW, ADD PA-1(W5) EFFECTIVITY

DWG Nº	** DASH Nº	REQ'D/MOD	DWG TITLE	N/A	CHANGE Nº
LDW280-10651	-13 -15	3 1	SEE DWG	LDW280-53162	E5
-10697	-33	1			C1
-10698	-29, -33, -35	1 EA			E4
-10699	-21, -25	1 EA			B6
-10878	-22	1			C1
-10880	-15, -19	1 EA			B4
-10882	-23, -25, -27 -29, -31, -33	1 EA			B6
-10884	-15 -19, -21	3 1 EA			36
-11074	-11, -13, -15	1 EA			A5
-11075	-11, -13, -15, -17, -19	1 EA			A4
-11076	-11, -13, -15, -17, -19	1 EA			A5
-11077	-11, -13, -17, -19, -21	1 EA			A5
-11078	-11, -13, -15, -17, -19	1 EA			A4
-11079	-11, -15, -17, -21, -23	1 EA			A5
-11209	-11 -13	1 2			A3
-11237	-11, -15	1 EA			A7
-11238	-11, -13, -15, -17	1 EA			A1
-11239	-11 -13	3 1			A1
-11240	-11 -13, -15, -17	3 1 EA			A2
-11241	-11	3			A1
-11242	-11, -13, -15, -17	1 EA			A1
-11354	-11, -13	1 EA			B3
-11465	-17	2			A7
-11976	-11, -13, -15, -17, -19	1 EA			A3
-11482	-11, -17 -13, -15	2 EA 1 EA			A3
-11483	-11, -13, -15, -17, -19	1 EA			A3
-11484	-11, -13	1 EA			A3
-11505	-11, -23 -19, -21	1 EA			A5
-11506	-13, -19, -21	1 EA			B1
-11523	-11 -15	1 2			A4
LDW280-11660	-11, -21 -15, -17, -19	1 EA 2 EA	SEE DWG	LDW280-53162	A3
~~LDW280-11668~~	~~-11~~		~~SEE DWG~~	~~LDW280-5[illegible]~~	

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐	LCR 19-1124	5

REASON FOR EO: UPDATE DWG REQ'TS FOR PA-1

DESCRIPTION OF EO: ON ** ADDED PA-1(W5) REQ'TS

GAEC EO RELEASE: JK 3/13/67

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		PA-1(W5)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

APPROVED BY: '5' — 3/7/67; UDI — 3/7/67; SUPPORT; RELIAB. GROUP; GROUP LEADER — 3/7/67; STRESS GROUP — 3/; LIAISON ENGRG; PROJ ENGRG — 3/8/67; 3-11-67

PRIORITY: C

DRAWING TITLE: NOTED ABOVE

DRAWING NO.: LEO 280

EO NO.: 512

ISSUED BY: M. SHAPIRO X1153   SECTION: UDI   GROUP NO.: 335   PL: 35

01
NAS 9-1100

C

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10878		EO NO. C2
CONTROL INFO NO. LM-5-15226		

IN B/M
REMOVE LDW280-10878-21 N/A LDW280-28162
MOD. LTA-8 (18), LM-1 (31), LM-2 (32) & QUAL TEST (72)
1 EA/MOD

RELEASED BY LIAISON

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐

5

REASON FOR EO: PART NO LONGER REQD

DESCRIPTION OF EO: IN B/M
REMOVED -21, N/A LDW280-28162, MOD LTA-8 (18)
LM-1 (31), LM-2 (32) & QUAL TEST (72) 1 EA/MOD

GAEC EO RELEASE: C ✓

MODEL	EFFECTIVITY PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8 (18)	
LM		LM-1 & -2 (31) & (32)	
LM		QUAL TEST (72)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS										
				APPROVED BY								
✓			✓ -21	DATE	6/15/67				6-1-67	6-1-67	6/19	6/20/67
REVISE DWG	RECORD EO	REWORK	SCRAP	1		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	BEAM A/S~M/S LOWER THERMAL SHIELD	LDW280-10878	C2

ISSUED BY LIAISON ✓. McGILL/GR X6226 SECTION VDI GROUP NO. 335 PL 5

01

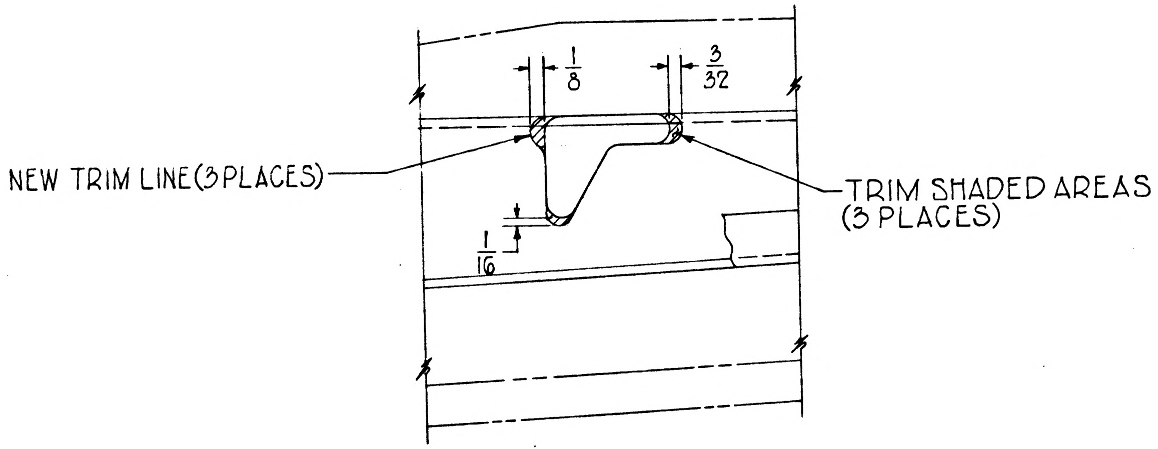
NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10878
EO NO. C4
CONTROL INFO NO. LM3-5934

ON-22 IN FLD



DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG	

REASON FOR EO: TO PROVIDE BETTER FIT ON ASSEMBLY

DESCRIPTION OF EO: ON-22 IN FLD
REVISED TRIM (3 PLACES)

GAEC EO RELEASE (2) (3)

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-6 (36)	
		THRU	
		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK ✓ SCRAP

APPROVED BY				—	BM			
DATE	1/5/68				12-21-67	12-21-67	1/5/68	12-27-67
	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONT~~

PRIORITY: C3
DRAWING TITLE: BEAM A/S-M/S Z10.25 LOWER THERMAL SHIELD
DRAWING NO.: LDW280-10878
EO NO.: C4

ISSUED BY LIAISON Y. BOLLO/G. DIEHL x2151 12-20-67 NB SECTION V.D.I GROUP NO. 335 PL 25

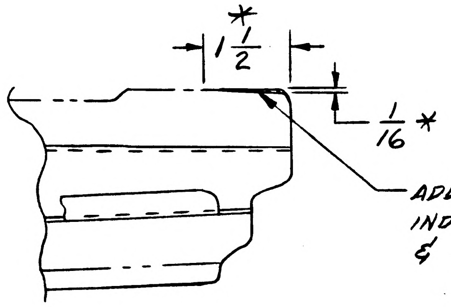
01 NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW280-10878 | EO NO. C5
CONTROL INFO NO. LM-3-6800

CN-22 IN FLD/DWG.;



ADD TAPERED TRIM AS INDICATED BY DIMENSIONS & SHADED AREA.

* - DIMENSIONS ARE FOR LOFTING ONLY. NOT TO BE INCORPORATED ON DWG.

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐

(3)

REASON FOR EO	DESCRIPTION OF EO
TO PROVIDE BETTER FIT ON ASSEMBLY	ON-22 IN FLD/DWG. REVISED TRIM.

EO RELEASE 3/22 JK

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-9(39) THRU LM-15(45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG	RECORD EO	REWORK	SCRAP
✓		✓	

APPROVED BY				FDR/	J.K.	BM		
DATE	3/21/69			3/21/69	3/13/69	3-14-69	3/21/69	3-18-69
	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	BEAM - A/S - M/S Z10.25 LOWER THERMAL SHIELD	LDW280-10878	C5

ISSUED BY LIAISON - J. MC GILL X-2151 AB SECTION VDI GROUP NO. 280 PL 25

01 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280 | EO NO. 1491
CONTROL INFO NO. LDW280B8217

FOR THE FOLLOWING DWGS (*) [redacted])

REMOVE [redacted] LM-15 (45) : EFF

DRAWING Nº (*)	** DASH Nº [redacted]	[redacted]	TITLE	NEXT ASSEMBLY	CHANGE Nº
LDW280 - 11851 ✓	-11	[redacted]	SEE DWG	LDW280-53159	A2
- 11854 ✓	-11, -13	[redacted]			A2
M11015 ✓	-11-1	[redacted]			B1
- 12138 ✓	-11, -13, -15, -17, -19, -21	[redacted]			B1
- 12140 ✓	-11, -13, -15	[redacted]		53159	B1
- 10698 ✓	-29, -33, -35	[redacted]		53162	C3
- 10697 ✓	-33	[redacted]			C4
- 10699 ✓	-21, -25	[redacted]			C7
- 10878 ✓	-22	[redacted]			C6
LDW280 - 10880	-15, 17	[redacted]	SEE DWG	LDW280-53162	C1

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD # 3587 [redacted] PKG 13 Pg. 13 (5)

REASON FOR EO: CONFIGURATION CHANGE TO LM-15

DESCRIPTION OF EO: FOR [redacted]'s (*-[redacted] **), [redacted] REMOVED [redacted] LM-15 (45) EFF.

GAEC EO RELEASE ⓡ NR
7-18-69
7/28/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO ☐

DISPOSITION OF PARTS: REWORK ☐ SCRAP ✓

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOV
APPROVED BY	Jap			FDR			Jap	
DATE	7/7/69			7-8-69			7/10/69	7/24/69

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DRAWING	LEO-280	1491

8-15-69
ISSUED BY Geo. W. Rocklein X86048 4/25/69 (ML) SECTION Ven. Des. Int. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-10880 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53162	QUALTEST(7[illegible])	1 EA
LEM	LDW280-53162	PA-1(W5)	1 EA
LEM	LDW280-53162	LM-15(45)	1 EA
		THRU	
LEM	LDW280-53162	LM-3(33)	1 EA
LEM	LDW280-28162	QUAL TEST(10)	1 EA
LEM	LDW280-28162	LEM-2(32)	1 EA
LEM	LDW280-28162	LEM-1(31)	1 EA
LEM	LDW280-28162	LTA-8(18)	1 EA

PART NO. LDW280-10880-15 & -19

GAEC SCH NO. 30-

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	B	B	B	B
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED —

LAST DASH NO. USED -19

GRUMMAN REL INFO B

PRIM NO. 215 JK(001) MP-1F-10&11

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.010 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	
LAYOUT BY	KORNELY
CHECKED BY	
GROUP LDR	P HENTON 4/21
VDI	W. BISCHOFF
STRUCT	AP FEB
STRUCT	HILDERMAN 4/23
WEIGHTS	D. ROBESCH 4/26

PROJ ENGR J. ALDER 4/26
REL GROUP BOTTI 4/28/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BEAMS
+Z30-ASCENT STAGE-MID-SECT. LOWER
THERMAL SHIELD

SIZE B
CODE IDENT NO. 26512
LDW280-10880 B
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

DWG SUPERSEDES LDW280-10880 NO CHG 8/2/66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
									RETRACED NO CHG LAST REV NO CHG LOFTED DWG WAS DIMENSIONED DWG SH 1.00 OF 4 WAS SH 1 OF 1				Collett 8/12/66		
A		1.00, 1.10 2.00 & 3.00							REMOVED -11 & -13 ADDED -15 & -17 IN MODEL BLOCK REMOVED LEM-3(33) THRU LEM-6(36) EFFECTIVITY	LEM-3(33) THRU LEM-6(36)		11 & -13	Collett 9/2/66		
B	1	1.00, 2.00 3.00	2B 6A					EOB1	REMOVED -17, ADDED -19	LTA 8, LM-1 & LM-2		✓	J. BISCALDI 10-17-68	BC	
	2	1.00					✓	LE0280-364	ON LDW 280-10880-15 & -19 ADDED "QUAL TEST".	QUAL TEST	NOT	REQ'D			
	3	1.00					✓	LE0280-380 REF LAV250-844	FOR LDW 280-10880-15 & -19 ADDED LM 3(33) THRU LM-15(45) EFF.	LM-3 THRU LM-15					
	4	1.00					✓	LE0280-512 LCR 19-1124	ON LDW280-10880-15 & -19 ADDED PA-1(W5) REQ'TS.	PA-1					
	5	1.00					✓	LE0280-738 LCD 2104	FOR LDW280-10880-15 & -19 ADDED QUAL TEST (70)	QUAL TEST (70)					

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS
B					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10880	B

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10880-19	E	BEAM	AL ALY SH	QQ-A-250/12	7075-O	.040×6⅛×17¾	T6	88	
		LDW280-10880-15	E	BEAM	AL ALY SH	QQ-A-250/12	7075-O	.040×4×19¼	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	AL HEAT TREAT	MIL-H-6088						
88	ANODIZE	LSP14-9030						

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10880	B

SCALE NONE

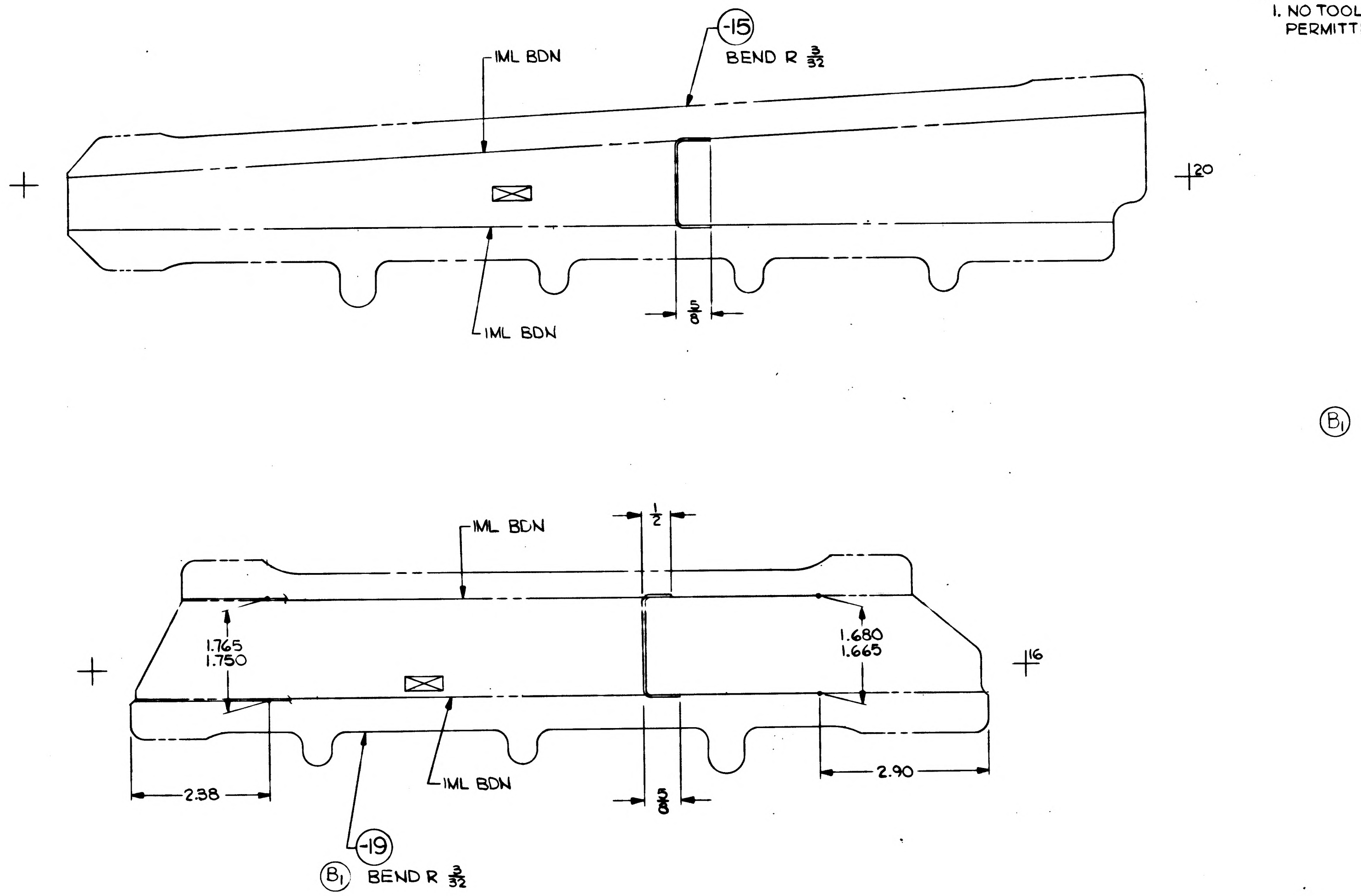
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

LDW280-10880 B



NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	✓
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE D	CODE IDENT NO. 26512	LDW280-10880	B
MODEL OR END ITEM	SCALE FULL		SHEET 3 00	

FOR PHOTO REPRODUCTION

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280 | EO NO. 1491
CONTROL INFO NO. LDW280B8217

FOR THE FOLLOWING DWGS (*) [redacted])

REMOVE [redacted] LM-15 (45): EFF

DRAWING № (*)	** DASH № [redacted]	[redacted]	TITLE	NEXT ASSEMBLY	CHANGE №
LDW280 - 11851 ✓	-11	[redacted]	SEE DWG	LDW 280 - 53159	A2
- 11854 ✓	-11, -13	[redacted]			A2
M11015 ✓	-11-1	[redacted]			B1
- 12138 ✓	-11, -13, -15, -17, -19, -21	[redacted]			B1
- 12140 ✓	-11, -13, -15	[redacted]		53159	B1
- 10698 ✓	-29, -33, -35	[redacted]		53162	C3
- 10697 ✓	-33	[redacted]			C4
- 10699 ✓	-21, -25	[redacted]			C1
- 10878 ✓	-22	[redacted]			C6
LDW280 - 10990 ✓	-15, -19	[redacted]	SEE DWG	LDW280 - 53162	C1

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD # 3587 [redacted] PKG 13 Pg. 13 (E)

REASON FOR EO
CONFIGURATION CHANGE To LM-15

DESCRIPTION OF EO
FOR [redacted] (*-[redacted] **) [redacted] REMOVED [redacted] LM-15 (45) EFF.

GAEC EO RELEASE
7-18-69
7/2?/69
7-24-69

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK SCRAP ✓

APPROVED BY				FDR				
DATE	7/2/69			7-8-69	7/?/69		7/10/69	7-24-69
	NDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DRAWING	LEO-280	1491

8-15-69
ISSUED BY Geo. W. Rocklein X86048 4/25/69 (ML) SECTION Veh. Des. Int. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-10881 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28162	LEM-2(32)	1
LEM	LDW280-28162	LEM-1(31)	1
LEM	LDW280-28162	LTA-8(18)	1

PART NO. LDW280-10881-25 — GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28162	LEM-2(32)	2
LEM	LDW280-28162	LEM-1(31)	2
LEM	LDW280-28162	LTA-8(18)	2

PART NO. LDW280-10881-23 — GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO. — GAEC SCH NO.

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00
REV	A	A	A		A
SHEET					
REV					
SHEET					
REV					

LAST SECT LTR USED

LAST DASH NO. USED -25

GRUMMAN REL INFO A

PRIM NO. 215 FR(001) MY 7/6 A

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 — LINE ITEM #1 — DOCUMENTATION TYPE II

DRAWN BY	KORNELY
LAYOUT BY	KORNELY
CHECKED BY	JG Ⓐ
GRP. LDR.	P. HENTON 4/22
V.D.I.	W. BISCHOFF 4/22
STRUCT.	F. BUNCE 4/23
STRUCT.	HILDERMAN 4/23
WEIGHTS	D. ROBESCH
PROJ ENGR	J. ALBER 4/26
REL GROUP	BOTTI 4/28/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

STIFFENER
+Y54 ASCENT STAGE~MID SECT.
LOWER THERMAL SHIELD

SIZE B — CODE IDENT NO. 26512 — LDW280-10881 A

SCALE NONE — SHEET 1.00 OF 4

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-10881 NO CHANGE 8-11-66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ________

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
		RETRACED-NO CHANGE-LAST REV "NO CHANGE SHT. 1 OF 4 WAS SHT 1. OF 1. LOFTED DWG WAS DIMENSIONED-A-T GUERCIA 7-29-66													
A	1	1.00, 1.10, 2.00 & 3.00					✓	EO A1	DELETED -11, -13 & -15. ADDED -17, -19 & -21	LTA-8 LEM-1 THRU-6		-11, -13, & -15 J.B.	GUERCIA 7-29-66		
	2	1.00, 1.10 2.00 & 3.00						Ⓡ	DELETED -17, -19 & -21 ADDED -23 & -25	LTA-8, LEM-1 THRU-6		-17-19 & -21 ZA	GENTILE 8-5-66		

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY
A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10881	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10881-25	E	STIFFENER	AL ALLOY SH	QQ-A-250/12	7075	.028x1¾x6¾	T6	88	
		LDW280-10881-23	E	STIFFENER	AL ALLOY SH	QQ-A-250/12	7075	.028 x 1¾ x 6¾	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-10881
A

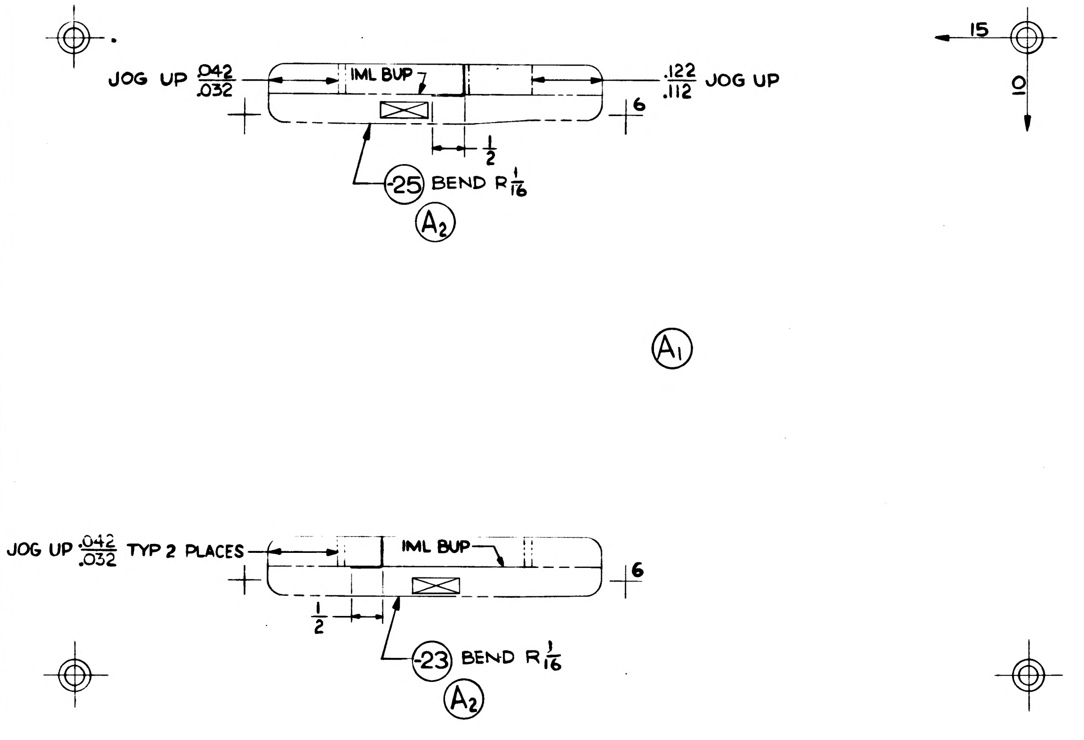
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	C	26512	LDW280-10881	A
	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

LDW280-1C881 A

LDW280-10881 A

01

NAS 9-1100

01

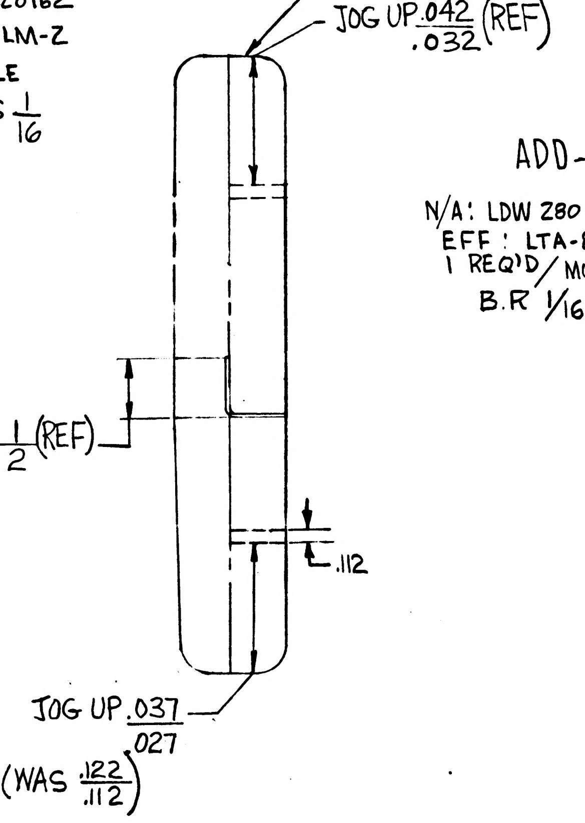
ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW 280-10981		EO NO. B1	
CONTROL INFO NO. LDW280A1046			

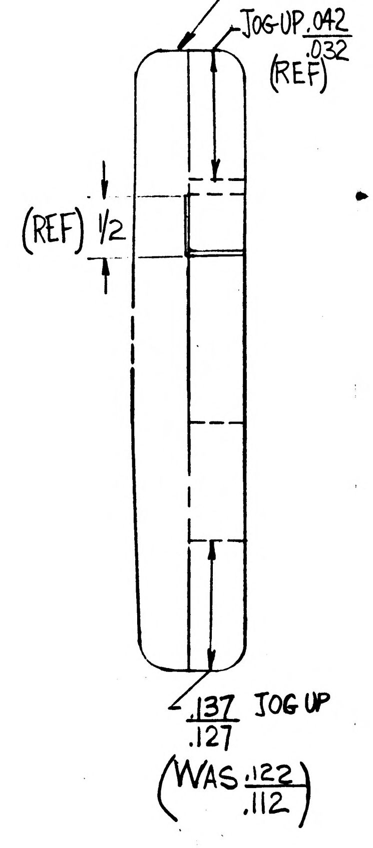
ADD -27 (SAME AS -25 EXCEPT AS SHN.)
REMOVE -25

N/A : LDW 280-28162
EFF: LM-1 & LM-2
1 REQ'D/MODULE
BEND RADIUS $\frac{1}{16}$



JOG UP $\frac{.042}{.032}$ (REF)
$\frac{1}{2}$ (REF)
.112
JOG UP $\frac{.037}{.027}$
(WAS $\frac{.122}{.112}$)

ADD-29 (SAME AS-25 EXCEPT AS SHOWN.
N/A: LDW 280-28162
EFF: LTA-8
1 REQ'D/MODULE
B.R 1/16



JOG-UP $\frac{.042}{.032}$ (REF)
(REF) 1/2
$\frac{.137}{.127}$ JOG UP
(WAS $\frac{.122}{.112}$)

NAS 9-1100

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		3

REASON FOR EO	DESCRIPTION OF EO	GAEC C EO RELEASE
DESIGN CHANGE - TO ACCOMMODATE MATING ANGLE	ADDED-27 & -29, REMOVED-25	FK 10/11/66

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8 (18)	
LM		LM-1 (31)	
LM		LM-2 (32)	

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
✓			-25

APPROVED BY		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONT~~
DATE ✓	10/10			10/10	10/10		10-11-66	10-11-66

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	STIFFENER + Y54 A/S M/S LWR THERMAL SHIELD	LDW 280-10881	B1

ISSUED BY LIAISON / V. BOLLO / J. ZAKIN X 7033   SECTION V.D.I.   GROUP NO. 335   PL 35

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW 280-10881
EO NO. B3
CONTROL INFO NO. LM5-9790

CHANGE NUMBER B2 WAS B1
REF LDW 280-10881
ON LEO 280-364

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

(5)

REASON FOR EO: INCORRECT CHANGE No. ISSUED ON LEO 280-364

DESCRIPTION OF EO: CORRECTED CHANGE NUMBER FOR LEO 280-364, B2 WAS B1

GAEC EO RELEASE: VE

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOT REQD	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK NOT SCRAP REQD

APPROVED BY	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	[illegible]
						CH		Botti
DATE	12/9/66					11-30-66	12-1-66	11-29-66
6								

PRIORITY: E

DRAWING TITLE: STIFFNER +Y54 A/S - M/S LWR THERMAL SHIELD

DRAWING NO. LDW 280-10881

EO NO. B3

ISSUED BY LIAISON, D. VALENZA SECTION VDI GROUP NO. 335 PL 35

01

NAS 9-1100

ENG 32.1 REV 3-66 FITH

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10881
EO NO. B4
CONTROL INFO NO. LDW280A-6601

REMOVE -27
EFF LM-1(31) & LM-2(32)
N/A LDW280-28162
(1 REQ'D/VEH)

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐	LCD-19-1244 5

REASON FOR EO: INCREASED 'FITH' LOADS

DESCRIPTION OF EO: REMOVED -27 FROM LM-1(31) & LM-2(32)

GAEC EO RELEASE: JK 4/26/7

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-1(31)	
		LM-2(32)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK | SCRAP -27 ✓

APPROVED BY								
DATE	4/26/67			4/26/67	HWG		4/26/67	4-27-67
5	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: C
DRAWING TITLE: STIFFENER +Y54 A/S M/S LWR THERMAL SHIELD
DRAWING NO.: LDW280-10881
EO NO.: B4

ISSUED BY M.SHAPIRO X1392 SECTION VDI GROUP NO. 335 PL 25

01 NAS 9-1100

LDW280-10882 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53162	PA-1 (47)	1
		LM-15 (45)	1
		LM-14 (44)	1
		LM-13 (43)	1
		LM-12 (42)	1
		LM-11 (41)	1
		LM-10 (40)	1
		LM-9 (39)	1
		LM-8 (38)	1
		LM-7 (37)	1
		LM-6 (36)	1
		LM-5 (35)	1
		LM-4 (34)	1
LM	LDW280-53162	LM-3 (33)	1

PART NO. LDW280-10882-33 GAEC SCH NO. 30

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28162	QUAL TEST	1
	LDW280-53162	PA-1 (47)	1
		LM-15 (45)	1
		LM-14 (44)	1
		LM-13 (43)	1
		LM-12 (42	1
		LM-11 (41)	1
		LM-10 (40)	1
		LM-9 (39)	1
		LM-8 (38)	1
		LM-7 (37)	1
		LM-6 (36)	1
		LM-5 (35)	1
		LM-4 (34)	1
LM	LDW280-53162	LM-3 (33)	1

PART NO. LDW280-10882-31 GAEC SCH NO. 30

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28162	LM-2 (32)	1
LM	LDW280-28162	LM-1 (31)	1

PART NO. LDW2[illegible]-10882-31-1

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53162	PA-1 (47)	1 EA
		LM-15 (45)	1 EA
		LM-14 (44)	1 EA
		LM-13 (43)	1 EA
		LM-12 (42)	1 EA
		LM-11 (41)	1 EA
		LM-10 (40)	1 EA
		LM-9 (39)	1 EA
		LM-8 (38)	1 EA
		LM-7 (37)	1 EA
		LM-6 (36)	1 EA
		LM-5 (35)	1 EA
		LM-4 (34)	1 EA
	LDW280-53162	LM-3 (33)	1 EA
	LDW280-28162	LM-2 (32)	1 EA
	LDW280-28162	LEM-1 (31)	1 EA
	LDW280-28162	QUAL TEST	1 EA
LM	LDW280-28162	LTA 8 (19)	1 EA

PART NO. LDW280-10882-23, -25, 27 & 29 GAEC SCH NO. 30-

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	B	B	B		B				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO B		
LAST DASH NO. USED	-33	PRIM NO. 215	J.K.001 MP-5B-5/17/7	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.030 ±1°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY		RELIABILITY	
LAYOUT BY	KORNELY		
CHECKED BY	PHENTON 4-25		
GROUP LEADER			
VEH.DES INT.			
STRUCTURES	HILDERMAN 4-25	PROJ ENGR	J. ALBER, R.C. 4-28
STRUCTURES	J.V. F.B. 4-25	REL GROUP	A. CARAMANICA 5-2-66
WEIGHTS	D. ROBESCH 4-27		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CAPS
+Y54-ASCENT STAGE
MID SECTION LOWER THERMAL SHIELD

SIZE B CODE IDENT NO. 26512 LDW280-10882 B
SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-10882 N.C. 8-4-66

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
RETRACED NO CHANGE LAST REVISION NO CHANGE. LOFTED DWG (WAS) DIMENSIONED DWG. ADDED SHEET 1.00, 1.10 & 2.00. SHEET 1.00 OF 4 (WAS) 1 OF 1 P. CARSTENSEN 8-4-66															
A	1							EO A1	ADDED N/A, ADDED ENVELOPE DIMENSIONS CHANGED JOGGLE DEPTH.	LTA-8 LEM-1 THRU-LEM-6	NOT	REQD	P. CARSTENSEN 8-4-66		
	2							EO A2	IN FLD ON-15 CAP ADDED .83 DIM IN SECTION ADDED .25 FLANGE TO PICTURE OF -15, REMOVED LOWER VIEW.		-15				
	3								IN MODEL BLOCK FOR N/A LDW280-28162 REMOVED EFFECTIVITY LEM-3, -4, -5 & -6.	LEM-3, -4-5 & -6	NOT	REQD			
	4								IN FLD & B/M REMOVED -11, -13, -17 & -19 ADDED -23, -25, -27 & -29.	LTA-8 LEM-1 & -2		-11, -13, -17 & -19			
	5								ON-15 ADDED CHEM-MILLING .040 THICKNESS (WAS) .063 OVERALL LENGTH 18.38 (WAS) 18.54, REVISED TRIM.		-15				
B	1	1.10 & 3.00					✓	E.O. B1	REVISED TRIM OF -15	LTA-8, LM-1 & -2	✓		R. NISBET 5-8-67		
	2	1.00, 1.10, 2.00 & 3.00						E.O. B2	REMOVED -15 & ADDED -31			-15			
	3	1.00 & 1.10					✓	LEO 280-364	ON-23, -25, -27, -29 & -31 ADDED "QUAL TEST"	QUAL TEST	NOT	REQD			
	4	1.00, 1.10, 2.00 & 3.00					✓	E.O. B4	ADDED -33	LM-3 THRU LM-15	NOT	REQD			
	5	1.00 & 1.10					✓	LEO 280-380	FOR -23, -25, -27, -29 & -31 ADDED LM-3 (33) THRU LM-15 (45) EFF						
	6	1.00 & 1.00					✓	LEO 280-512 LCD-1124	ON -23, 25, -27, 29, -31 & -33 ADDED PA-1 (W5) REQUIREMENTS	PA-1 (W5)	NOT	REQD			
	7	1.10 & 3.00					✓	E.O. B7	REVISED TRIM OF -15	LM-1 & -2	✓				
	8						✓	E.O. B8	REF E.O. B7 TRIM-15 SHOULD BE TRIM-31 CREATING -31-1, REMOVED LM-1 (31) & LM-2 (32) EFF FROM -31			-31			
	9	1.00, 1.10					✓	LCD-1124	REF LEO 280-512 ADDED PA-1 (W5) SHOULD BE PA-1 (47)	PA-1 (47)	NOT	REQD			

FOR CONTINUATION OF REVISIONS SEE SHEET ________

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10882	B
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10882-33	E	CAP	AL ALLOY SH	QQ-A-250/12	7075	.063X3X6	T6	88	
		LDW280-10882-29					7075	.032×2¼×6	T6	88	
		LDW280-10882-27					7075	.032×3½×17¼	T6	88	
		LDW280-10882-25					7075	.032×3×14⅞	T6	88	
		LDW280-10882-23					7075	.032×2¼×5½	T6	88	
		LDW280-1088231-1					7075	.063X2¾X19⅛	T6	88	
		LDW280-10882-31	E	CAP	AL ALLOY SH	QQ-A-250/12	7075	.063×2¾×19⅛	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	AL HEAT TREAT	MIL-H-6088
88	ANODIZE	LSP14-9030
CM	CHEM-MILLING	LSP14-26100

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10882	B

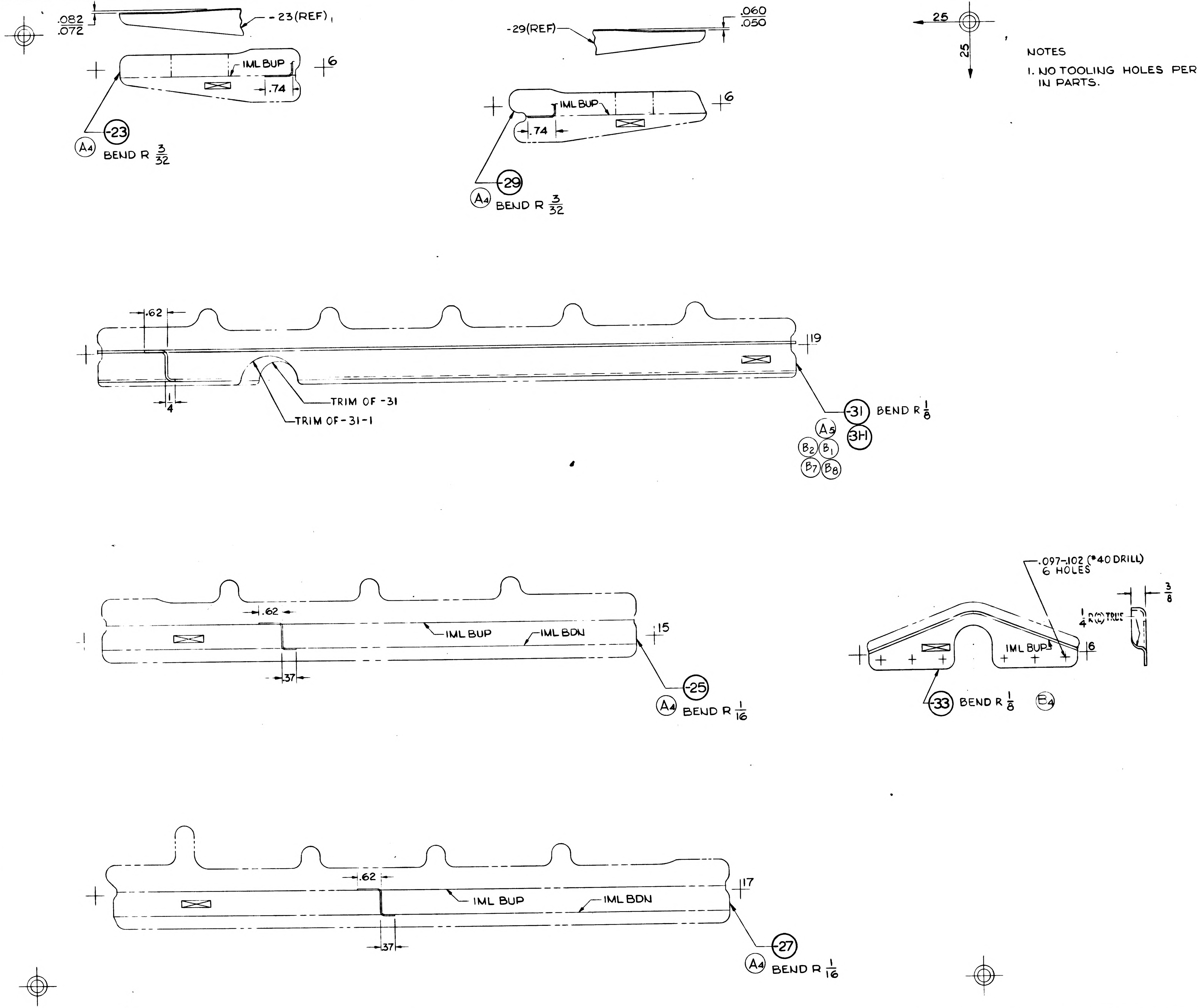
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


.082
.072
-23(REF)
IML BUP
6
.74
A4
-23
BEND R $\frac{3}{32}$
-29(REF)
.060
.050
IML BUP
6
.74
A4
-29
BEND R $\frac{3}{32}$
25
25
.62
19
1/4
TRIM OF -31
TRIM OF -31-1
-31
BEND R $\frac{1}{8}$
A5
3H
B2
B1
B7
B8
.62
IML BUP
IML BDN
15
.37
A4
-25
BEND R $\frac{1}{16}$
.097-.102 (#40 DRILL)
6 HOLES
$\frac{3}{8}$
$\frac{1}{4}$ R(Ⓡ) TRUE
IML BUP
16
-33
BEND R $\frac{1}{8}$
B4
.62
IML BUP
IML BDN
17
.37
A4
-27
BEND R $\frac{1}{16}$

NOTES

1. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE F	CODE IDENT NO. 26512	LDW280-10882	b
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280
EO NO. 1492
CONTROL INFO NO. LDW280B8218

FOR THE FOLLOWING DWGS (*) [redacted]

REMOVE [redacted] LM-15 (45) : EFF.

DRAWING Nº (*)	**DASH Nº	[redacted]	TITLE	NEXT ASSEMBLY	CHANGE Nº
LDW280 - 10882 ✓	-23,-25,-27,-29,-31,-33	[redacted]	SEE DWG	LDW 280 - 53162	C2
10884	-15, 21	[redacted]			C3
10651	-13, 15	[redacted]			C1
11074	-11,-13,-15	[redacted]			B1
11075	-11,-13,-15,-17,-19	[redacted]			B1
11076	-11,-13,-15,-17,-19	[redacted]			B1
12136	-11,-13,-15	[redacted]			B1
11077	-11,-13,-17,-19,-21	[redacted]			B1
11078	-11,-13,-15,-17,-19	[redacted]			B1
LDW280 - 11079	-11,-13,-17,-21,-23	[redacted]	SEE DWG	LDW280-53162	B1

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD # 3587 [redacted] PKG 13 Pg. 13 7/14 (5)

REASON FOR EO: CONFIGURATION CHANGE To LM-15

DESCRIPTION OF EO: FOR [redacted] (*-**) [redacted] REMOVED [redacted] LM-15 (45) EFF.

GAEC EO RELEASE: 7-18-69; JK 7/28/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO ☐
DISPOSITION OF PARTS: REWORK ☐ SCRAP ✓

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	COST
APPROVED BY				FDR				
DATE	7/8/69			7-8-69	7/10/69		7/10/69	7-26-69

PRIORITY: C
DRAWING TITLE: SEE DRAWING
DRAWING NO.: LEO-280
EO NO.: 1492

8-15-69
ISSUED BY GEO. W. ROCKLEIN X86048 6/25/69 (ML) SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-10883 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28162	LEM2(32)	1EA
LEM	LDW280-28162	LEM1(31)	1EA
LEM	LDW280-28162	LTA8(18)	1EA
PART NO. LDW280-10883-15¢-17		GAEC SCH NO. 30-	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL^C INFO A		
LAST DASH NO. USED	-17	PRIM NO.	LE(001)	
		215	MP-A	8-22-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM I
DOCUMENTATION TYPE II

DRAWN BY	KORNELY	RELEASE	
LAYOUT BY	KORNELY		
CHECKED BY			
GROUP LDR	HENTON 4/22		
VEH DES INT	W. BISCHOFF 4/22		
STRUCTURES	HILDERMAN 4/22	PROJ ENGR	J. ALBER/W. CRAFT 4/26
STRUCTURES	F. BUNCE 4/25	REL GROUP	C. BOTTI 4/26/66
WEIGHTS	D. ROBESCH 4/26		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CAPS
ASCENT STAGE 330, MID SECT LWR THRM SHLD

SIZE B
CODE IDENT NO. 26512
LDW280-10883 A
SCALE NONE
SHEET 1.00 OF 34

ENG 77.1 12-65

SUPERSEDES LDW280-10883 4-22-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE LAST REV N/C J.GARRAFFO SH 1OF 3 WAS SHEET 1OF1 ADDED SHEETS 1.10, 2.00 & 3.00	8-4-66					
A	1								REMOVED -11 & -13, ADDED -15 & -17	NOTED		✓	J. GARRAFFO 8-4-66		

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELEASE	PROJ ENGR	REL GROUP
	A			FOP 7/1					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10883	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10883-17	E	CAP	AL ALLOY SH	QQ-A-250/12	7075	$.032x2\frac{3}{4}x16\frac{3}{8}$	T6	88	
		LDW280-10883-15	E	CAP	AL ALLOY SH	QQ-A-250/12	7075	$.032x2\frac{3}{4}x18\frac{5}{8}$	T6	88	

SYM ~~OR NO.~~	PROCESS ~~OR FINISH~~	~~GRUMMAN SPEC OR~~ MILITARY SPEC	~~SYM~~ OR NO.	~~PROCESS~~ OR FINISH	GRUMMAN SPEC OR ~~MILITARY SPEC~~	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	AL HEAT TREAT	MIL-H-6088	88	ANODIZE	LSP14.9030			

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

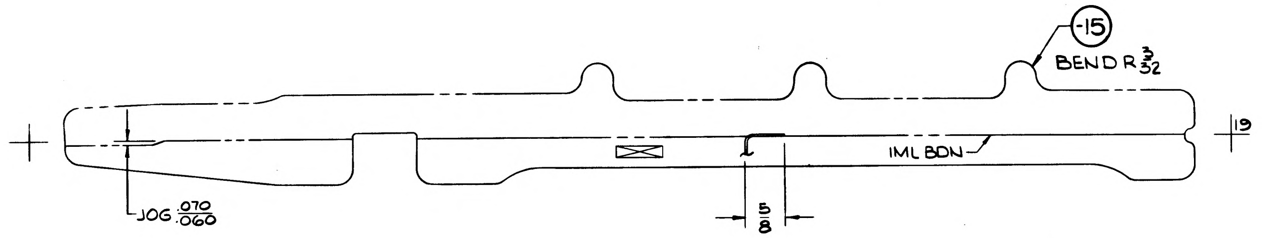
SIZE	CODE IDENT NO.		
B	26512	LDW280-10883	A
SCALE NONE			SHEET 2.00

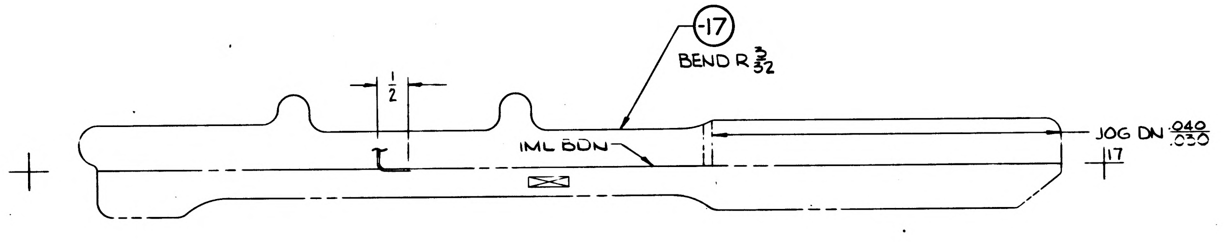
ENG 77.2 7-65

01

NAS 9-1100

NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS.





MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-10883	A
	SCALE FULL		SHEET 3.00	

LDW280-10883

FOR PHOTO REPRODUCTION

K2

01 NAS 9-1100

LDW280-10884 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28162	LEM-2(32)	1
LEM	LDW280-28162	LEM-1(31	1
LEM	LDW230-28162	LTA-8 (18)	1
PART NO. LDW280-10884-17		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28162	LEM-2(32)	3 EA
LEM	LDW280-28162	LEM-1(31)	3 EA
LEM	LDW280-28162	LIA-8 (18)	3 EA
PART NO. LDW280-10884-15&-19		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28162	LEM-2(32)	2 EA
LEM	LDW280-28162	LEM-1 (31)	2 EA
LEM	LDW280-28162	LTA 3(18)	2 EA
PART NO. LDW280-10884-13		GAEC SCH NO. 30—	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.0	3.0						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL^C INFO A		
LAST DASH NO. USED	-19	PRIM NO.	LE(001)	
		215	MP-A	8-29-6

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.03 ±1°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	KORNELY		
LAYOUT BY	KORNELY		
CHECKED BY			
GRP LDR	P. HENTON 4/22		
V.D.I.	W. BISCHOFF		
STRUCTURES	F. BUNCE 4/23	PROJ ENGR	J. ALBERT
STRUCTURES	R. HILDERMAN 4/23	REL GROUP	BOTTI 4-28-66
WEIGHTS	D. ROBESCH 4/2		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

STIFFENER
ASCENT STAGE-MID-SECT
LOWER THERMAL SHIELD

SIZE	CODE IDENT NO.		
B	26512	LDW280-10884	A
SCALE	NONE	SHEET 1.00	OF 4.00

▲ THIS DWG. SUPERSEDES LDW280-10384 "NO CHANGE" 8-1-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
		RETRACED-NO CHANGE-LAST REV. "NO CHANGE" SHT 1 OF4 WAS SHT. 1 OF1. LOFTED DWG. WAS DIMENSIONED DWG.-A·T·GUERCIA- 8-2-66													
A	1						✓	②	DELETED -11; ADDED -13, -15, -17 & -19	LTA-8, LEM-1 LEM-2		-11	GUERCIA 8-15		9-2-66

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10884	A
SCALE NONE		SHEET 1.10	

FOR CONTINUATION OF REVISIONS SEE SHEET ________

ENG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10884-19	E	STIFFENER	AL ALLOY SH	QQ-A-250/12	7075	.028 x 1 3/4 x 5 5/8	T6	88	
		-17	E	↕	↕	↕	↕	.028 x 1 3/4 x 5 5/8	↕	↕	
		-15	E	↕	↕	↕	↕	.020 x 2 x 6	↕	↕	
		LDW280-10884-13	E	STIFFENER	AL ALLOY SH	QQ-A-250/12	7075	.020 x 2 x 6	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
38	ANODIZE	LSP-14-9030
T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10884	A

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

LDW280-10884 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53162	PA-1(47)	3
		LM-15(45)	3
		LM-14(44)	3
		LM-13(43)	3
		LM-12(42)	3
		LM-11(41)	3
		LM-10(40)	3
		LM-9(39)	3
		LM-8(38)	3
		LM-7(37)	3
		LM-6(36)	3
		LM-5(35)	3
		LM-4(34)	3
LM	LDW280-53162	LM-3(33)	3
LM	LDW280-28162	QUAL TEST	3
LM	LDW280-28162	LM-2(32)	3
LM	LDW280-28162	LM-1(31)	3
LM	LDW280-28162	LTA-8(18)	3
PART NO. LDW280-10884-15		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28162	QUAL TEST	1
LM	LDW280-28162	LM-2(32)	1
LM	LDW280-28162	LM-1(31)	1
LM	LDW280-28162	LTA-8(18)	1
PART NO. LDW280-10884-17		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53162	PA-1(47)	1
		LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(39)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
		LM-4(34)	1
	LDW280-53162	LM-3(33)	1
	LDW280-28162	QUAL.TEST	1
	LDW280-28162	LM-2(32)	1
LM	LDW280-28162	LM-1(31)	1
LDW280-10884-21			
LM	LDW280-28162	QUAL.TEST	1
LM	LDW280-28162	LTA-8(18)	1
PART NO. LDW280-10884-23		GAEC SCH NO. 30—	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.01	1.10	2.00	3.00				
REV	B	B	B	B	B				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO c	
LAST DASH NO. USED	-23	PRIM NO. 215	JK(001) MP-5 B-6/E/7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.03 ±1°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 | LINE ITEM #1 | DOCUMENTATION TYPE II

DRAWN BY	KORNELY		
LAYOUT BY	KORNELY		
CHECKED BY			
GRP LDR	P.HENTON 4/22		
V.D.I.	W.BISCHOFF		
STRUCTURES	APW F.BUNCE 4/23	PROJ ENGR	J. ALBER 4/
STRUCTURES	R.HILDERMAN 4/23	REL GROUP	BOTTI 4-28-66
WEIGHTS	D.ROBESCH 4/26		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

STIFFENER
ASCENT STAGE-MID-SECT
LOWER THERMAL SHIELD

SIZE	CODE IDENT NO.		
B	26512	LDW280-10884	B
SCALE	NONE	SHEET 1.00	OF 5.00

ENG 77.1 12-65

▲ THIS DWG. SUPERSEDES LDW280-10884 "NO CHANGE" 8-1-66.

01

NAS 9-1100

LDW280-10884 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53162	PA-1(47)	1
		LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
		LM-4(34)	1
	LDW280-53162	LM-3(33)	1
	LDW280-28162	QUAL TEST	3
		LM-2(32)	3
		LM-1(31)	3
LM	LDW280-28162	LTA-8(19)	3
PART NO. LDW280-10884-19		GAEC SCH NO.	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET									
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED

GRUMMAN REL INFO

PRIM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO.

LINE ITEM

DOCUMENTATION TYPE

DRAWN BY

LAYOUT BY

CHECKED BY

PROJ ENGR

REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SIZE B

CODE IDENT NO. 26512

LDW280-10884 B

SCALE NONE

SHEET 1.01 OF

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
		RETRACED-NO CHANGE-LAST REV. "NO CHANGE" SHT 1 OF4 WAS SHT. 1 OF1. LOFTED DWG. WAS DIMENSIONED DWG.- A T. GUERCIA- 8-2-66													
A	1						✓		DELETED -11, ADDED -13, -15, -17 & -19	LTA-8, LEM-1 LEM-2		-11	GUERCIA		
B	1	1.00, 1.10 2.00, 3.00						EO B1	ADDED -21 & -23, REMOVED -13, 1 PER MODULE	LTA-8, LM-1, LM-2		-13	J Gardella 6-1-67 JG		
	2	1.00, 1.10					✓	LEO280-364	ON-21 ADDED "QUAL TEST"	QUAL. TEST	NOT	REQ'D			
	3	1.00, 1.10 1.01					✓	LEO280-380	FOR -15, -19 & -21 ADDED LM3(33) THRU LM15 (45) EFF. ADDED SH 1.01, SH 1.00 OF 5. WAS 1.00 OF 4.	LM-3 THRU LM-15	NOT	REQ'D			
	4	1.00, 1.01 1.10					✓	LEO280-396	ON-15, -17 & -19 ADDED "QUAL TEST"	QUAL. TEST	NOT	REQ'D			
	5	1.00, 1.10					✓	LEO280-434	FOR DASH NO. 23 ADDED "QUAL TEST" EFF.	QUAL TEST	NOT	REQ'D			
	6	1.00, 1.01 1.10					✓	LEO280-512 LCD-1124	ON-15, -19 & -21 ADDED PA-1 (47) REQ'TS	PA-1 (47)	NOT	REQ'D			

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10884	B
SCALE NONE			SHEET 1.10

ENG 77.3 5-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10884-23	E	STIFFENER	AL ALLOY SH	QQ-A-250/12	7075	.020 x 2 x 6	T6	88	
		-21	E	↕	↕	↕	↕	.020 x 2 x 6	↕	↕	
		-19	E	↕	↕	↕	↕	.028 x 1 3/4 x 5 5/8	↕	↕	
		-17	E	↕	↕	↕	↕	.028 x 1 3/4 x 5 5/8	↕	↕	
		LDW280-10884-15	E	STIFFENER	AL ALLOY SH	QQ-A-250/12	7075	.020 x 2 x 6	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
38	ANODIZE	LSP-14-9030
T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

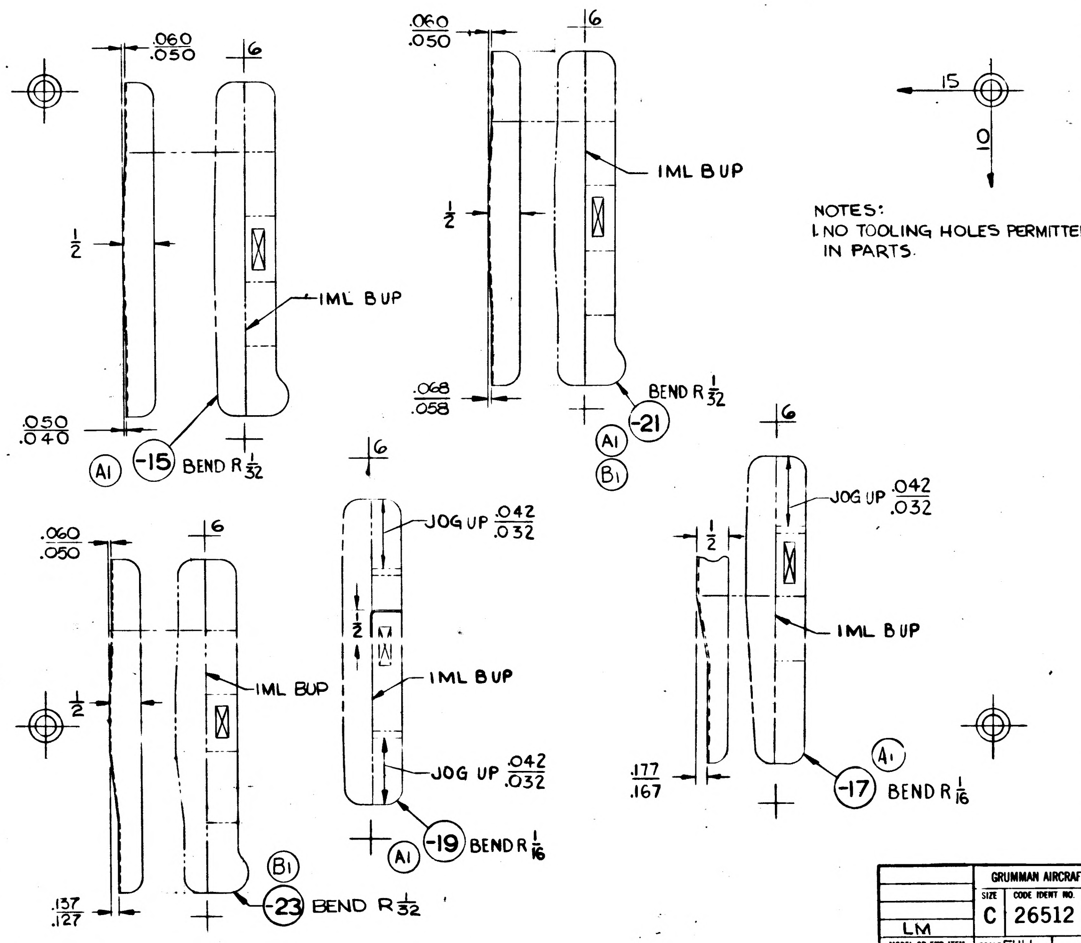
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-10884 B
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


.060
.050
6
1/2
IML BUP
.050
.040
A1
-15
BEND R 1/32
.060
.050
6
IML BUP
1/2
.068
.058
BEND R 1/32
A1
-21
B1
15
0
.060
.050
6
1/2
IML BUP
.137
.127
B1
-23
BEND R 1/32
6
JOG UP .042/.032
1/2
IML BUP
JOG UP .042/.032
A1
-19
BEND R 1/16
6
JOG UP .042/.032
1/2
IML BUP
.177
.167
A1
-17
BEND R 1/16

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▨ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 IN THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES.	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		RE
LM	C	26512	LDW280-10884	B
	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K1

LDW280-10884

01

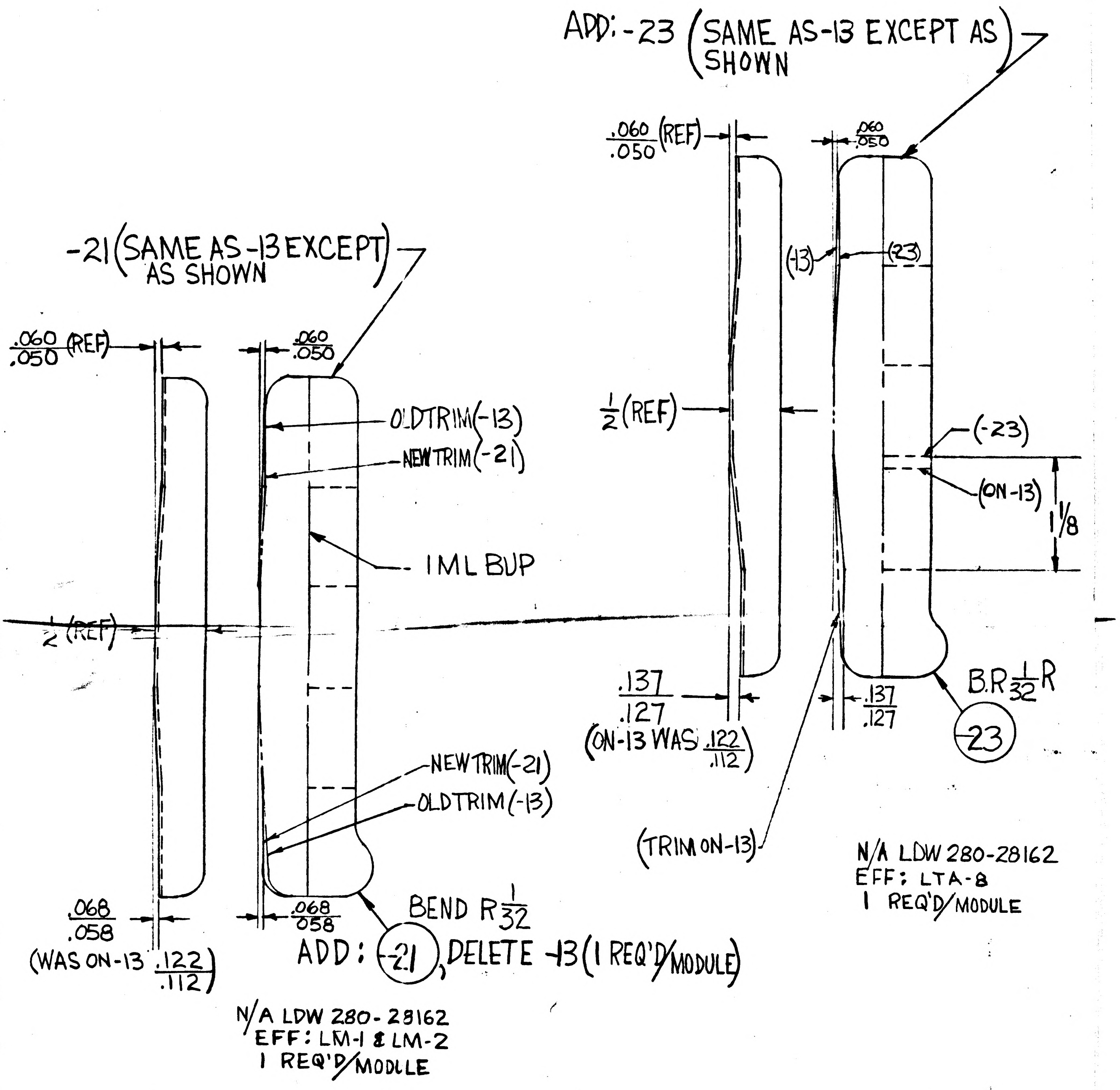
NAS 9-1100

ENG 32.2 REV 3-65

*

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10884
EO NO. B1
CONTROL INFO NO. LM-3-4048



ADD: -23 (SAME AS -13 EXCEPT AS SHOWN)
.060 .050 (REF)
.060 .050
(13)
(23)
½ (REF)
(-23)
(ON -13)
1/8
.137 .127 (ON-13 WAS .122 .112)
.137 .127
B.R 1/32 R
23
(TRIM ON-13)
N/A LDW 280-28162
EFF: LTA-8
1 REQ'D/MODULE
-21 (SAME AS -13 EXCEPT AS SHOWN)
.060 .050 (REF)
.060 .050
OLD TRIM (-13)
NEW TRIM (-21)
IML BUP
½ (REF)
NEW TRIM (-21)
OLD TRIM (-13)
.068 .058 (WAS ON-13 .122 .112)
.068 .058
BEND R 1/32
ADD: -21, DELETE -13 (1 REQ'D/MODULE)
N/A LDW 280-28162
EFF: LM-1 & LM-2
1 REQ'D/MODULE

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	3

REASON FOR EO: DESIGN CHANGE - TO ACCOMMODATE MATING ANGLE

DESCRIPTION OF EO: ADDED -21 & -23, REMOVED -13 (1/MODULE)

② GAEC C EO RELEASE: FK 10/20/6

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8 (18)	
LM		LM-1 (31)	
LM		LM-2 (32)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK SCRAP -13

APPROVED BY								
DATE	10/13		10/25/66	10/12	10/10	10-10-66	10-11-66	10-10-66
	V.D.I.	SUPPORT	~~DET.~~ ~~GROUP~~	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY C

DRAWING TITLE: STIFFENER ~ A/S ~ M/S ~ LWR THERM SHIELD

DRAWING NO. LDW 280-10884

EO NO. B1

ISSUED BY LIAISON/V. BOLLO/J. ZAKIN X7033 SECTION V.D.I. GROUP NO. 335 PL 35

01
NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 380
CONTROL INFO NO. LDW 280A-3285

FOR THE FOLLOWING DWGS. FOR DASH NO. NOTED ✱, ADD LM-3 (33) THRU. LM-15 (45) EFF.

DWG. NO.	DASH NO. ✱	CHG. NO.	NEXT ASSY.	NO. REQD/MOD.
LDW280-10651	-13	B4	LDW280-53162	3
10651	-15	B4		1
10697	-27	B7		1
10698	-29, -33, -35	B3		1 EA.
10699	-21, -23	B3		1 EA.
10880	-15, -19	B3		1 EA.
10882	-23, -25, -27, -29, -31	B5		1 EA.
10884	-15	B3		3
10884	-19, -21	B3		1 EA.
10878	-22	B4		1
11354	-11, -13	B2		1 EA
11465	-17	A5		1
11476	-11, -13, -15, -17, -19	A2		1 EA.
11482	-11, -17	A2		2 EA.
11482	-13, -15	A2		1 EA.
11483	-11, -13, -15, -17, -19	A2		1 EA.
11484	-11, -13	A2		1 EA.
11523	-11			1
11523	-15	A2		2
11074	-11, -13, -15	A3		1 EA.
11075	-11, -13, -15, -17, -19	A3		1 EA.
11076	-11, -13, -15, -17, -19	A4		1 EA.
11077	-11, -13, -17, -19, -21	A4		1 EA.
11078	-11, -13, -15, -17, -19	A3		1 EA.
11079	-11, -15, -17, -21, -23	A4		1 EA
11505	-11, -19, -21,	A4		1 EA
LDW280-11506	-13, -19	A4		1 EA
LDW280M 11148	-3	A4		1
LDW280P 11082	-1, -3	A3		1 EA.
LDW280P 11526	-15	A2	LDW280-53162	1

3

DETAIL SPEC REQ ☐ | CL II ENGRG CHG ☑ | CL I ENGRG CHG ☐ | REF LAV 250-844

REASON FOR EO: ADDITIONAL EFFECTIVITY REQ'D

DESCRIPTION OF EO: FOR ✱ ADDED LM 3(33) THRU LM 15(45) EFF.

GAEC EO RELEASE: FE 12/6/66

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LM 3(33) THRU LM 15(45)		

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: NOT REQD | REWORK | SCRAP

	APPROVED BY	DATE	
#2		11/14	VDI
SUPPORT			
RELIAB. GROUP			
GROUP LEADER		11/14	
STRESS GROUP		11/28	
LIAISON ENGRG			
PROJ ENGRG		12-1-66	
~~GOVT~~		12-3-66	

PRIORITY: C | DRAWING TITLE: SEE DWG. | DRAWING NO.: LEO 280 | EO NO.: 380

ISSUED BY G. OLIVER X1441 11/11/66 SECTION VDI. ASCENT STAGE GROUP NO. 335 PL 35

01
NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280
EO NO. 434
CONTROL INFO NO. LDW280A- 4727

FOR THE FOLLOWING DWGS FOR DASH NO. NOTED * ADD "QUAL TEST" EFF.

DWG. NO.	DASH NO *	CHG. NO.	NEXT ASSY	NO. REQD	TITLE
LDW280M10852 ✓	-3	A5	LDW280-28162	1	FITTING +Z 10.25 +Y54.0 A/S - M/S THERM SHLD
LDW280M10853	-1	B3		1	FITTING -Z 10.25 +Y54.0 A/S ~ M/S THERM SHLD
LDW280M10854	-1	A2		1	FITTING -Z31.0 +Y45.0 A/S ~ M/S THERM SHLD
LDW280M10855	-1	A3		1	FITTING. +Z 30.25 +Y35.093 A/S ~ M/S THERM SHLD
LDW280M10856	-3	A3		1	FITTING +Z 30.25 +Y54.0 A/S ~ M/S THERM SHLD
LDW280M10857	-1	A3		1	FITTING -Z31.0 +Y 35.093 A/S ~ M/S THERM SHLD
LDW280M10858	-1	A2		1	FITTING +Z 25.0 +Y49.0 A/S ~ M/S THERM SHLD
LDW280-11465	-15	A6		1	DOUBLER - A/S ~ M/S LWR RIGHT THERM SHLD
LDW280M10860	-3	B2		1	FITTING -Z 10.25 Y49 A/S M/S THERM SHLD
LDW280M10863	-1	B5		1	FITTING +Z 26 Y35.093 A/S ~ M/S THERM SHLD
LDW280M10864	-1	A2		1	FITTING +Z 26 Y 20.50 A/S ~ M/S THERM SHLD
LDW280M10869	-3	B8		1	BEAM ~ +Z 15.0 A/S M/S L.H. THERM SHLD
LDW280M10885	-1	C2		1	LWR SHLD X200 Z30
LDW280M10937	-1,-2	C1		1 EA.	FITTING A/S - M/S LWR THERMAL SHLD
LDW280M10938	-5	B5		1	FITTING Z 10.250 +Y 20 A/S M/S LWR THERM SHLD
LDW280M11138	-3,-5	B9		1	BEAM +Z 10.25 A/S-M/S RT LWR THERM SHLD
LDW280-10884	-23	B5		1	BOTTOM THERM SHLD

vV

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

REASON FOR EO: PARTS REQD FOR QUAL TEST

DESCRIPTION OF EO: FOR DASH NO. * ADDED "QUAL TEST" EFF.

GAEC EO RELEASE: E 1/6/7

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		QUAL. TEST (70).	

DRAWING CHANGE REQD: ✓ REVISE DWG / RECORD EO

DISPOSITION OF PARTS: NOT REQD (REWORK / SCRAP)

APPROVED BY		M.D.						
DATE	1/6	1-6-67		1/6	1/6		1-6-67	1-6-67
#6	VDI	~~SUPPORT~~ THERM	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONT~~

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO.: LEO 280

EO NO.: 434

ISSUED BY L. LUPINACI / A. PFORTSCH X1441 SECTION VDI GROUP NO. 335 PL 35

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.2 REV 3-65

DWG. NO. LEO 280
EO NO. 512
CONTROL INFO NO. LDW280A-5723

FOR THE FOLLOWING DWG S LISTED BELOW, ADD PA-1(W5) EFFECTIVITY

DWG No	** DASH No	REQ'D/MOD	DWG TITLE	N/A	CHANGE No
LDW280-10651	-13 -15	3 1	SEE DWG	LDW280-53162	E5
-10697	-33	1			C1
-10698	-29, -33, -35	1EA			B4
-10699	-21, -25	1EA			B6
-10878	-22	1			C1
-10880	-15, -19	1EA			B4
-10882	-23, -25, -27 -29, -31, -33	1EA			B6
-10884	-15 -19, -21	3 1EA			B6
-11074	-11, -13, -15	1EA			A5
-11075	-11, -13, -15, -17, -19	1EA			A4
-11076	-11, -13, -15, -17, -19	1EA			A5
-11077	-11, -13, -17, -19, -21	1EA			A5
-11078	-11, -13, -15, -17, -19	1EA			A4
-11079	-11, -15, -17, -21, -23	1EA			A5
-11209	-11 -13	1 2			A3
-11237	-11, -15	1EA			A7
-11238	-11, -13, -15, -17	1EA			A1
-11239	-11 -13	3 1			A1
-11240	-11 -13, -15, -17	3 1EA			A2
-11241	-11	3			A1
-11242	-11, -13, -15, -17	1EA			A1
-11354	-11, -13	1EA			B3
-11465	-17	2			A7
-11476	-11, -13, -15, -17, -19	1EA			A3
-11482	-11, -17 -13, -15	2EA 1EA			A3
-11483	-11, -13, -15, -17, -19	1EA			A3
-11484	-11, -13	1EA			A3
-11505	-11, -23 -19, -21	1EA			A5
-11506	-13, -19, -21	1EA			B1
-11523	-11 -15	1 2			A4
LDW280-11660	-11, -21 -15, -17, -19	1EA 2EA	SEE DWG	LDW280-53162	A3
~~LDW280-11668~~	~~-11~~	~~1~~	~~SEE DWG~~	~~[illegible]~~	

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

LCR 19-1124

5

REASON FOR EO: UPDATE DWG REQ'TS FOR PA-1

DESCRIPTION OF EO: ON ** ADDED PA-1(W5) REQ'TS

GAEC EO RELEASE: JK 3/13/67

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		PA-1(W5)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D REWORK SCRAP

APPROVED BY / DATE: 5 3/7/67; UDI 3/7/67; SUPPORT THERMO; RELIAB. GROUP; GROUP LEADER 3/7/67; STRESS GROUP 3/; LIAISON ENGRG; PROJ ENGRG 3/8/67; 3-11-67

PRIORITY: C

DRAWING TITLE: NOTED ABOVE

DRAWING NO.: LEO 280

EO NO.: 512

ISSUED BY M. SHAPIRO X1153 SECTION UDI GROUP NO. 335 PL 35

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW280-10884
EO NO. C2
CONTROL INFO NO. LM-3-5949

FOR -15 REVISE REQUIREMENTS (4 REQ'D) WAS (3 REQ'D)

FOR -19 REMOVE LM-3 THRU LM-15, PA-1 & QUAL. TEST EFFECTIVITY.

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

(3)

REASON FOR EO: TO AGREE WITH NEXT ASSEMBLY.

DESCRIPTION OF EO: FOR -15 (4 REQD) WAS (3 REQD)
FOR -19 REMOVED LM-3 THRU LM-15, PA-1 AND QUAL TEST EFFECTIVITY.

GAEC EO RELEASE: C JK

MODEL	EFFECTIVITY PROCURING ACTIVITY NO.	EFFECTIVITY GAEC UNIT NO.	EFFECTIVITY SUB CONTR UNIT NO.
LM		LM-3 (33)	PA-1 (47)
		THRU	QUAL. TEST (72)
		LM-15 (45)	

DRAWING CHANGE REQD REVISE DWG	DRAWING CHANGE REQD RECORD EO	DISPOSITION OF PARTS REWORK	DISPOSITION OF PARTS SCRAP
✓			-19

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY	JWS			—	BW			
DATE	5/11/68			—	5-2-68	5-2-68	5/11/68	5-2-68

PRIORITY: C
DRAWING TITLE: STIFFENER A.S.-M.S.-LOWER THERMAL SHIELD
DRAWING NO.: LDW280-10884
EO NO.: C2

ISSUED BY VPE / VIC BOLLO X2151 5-2-68 SECTION VDI GROUP NO. 280 PL 25

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NAS 9-1100

DWG 32.1 REV 3-68

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280 | EO NO. 1492
CONTROL INFO NO. LDW280B8218

FOR THE FOLLOWING DWGS (*) [redacted]

REMOVE [redacted] LM-15 (45): EFF.

DRAWING No (*)	**DASH No	[redacted]	TITLE	NEXT ASSEMBLY	CHANGE No
LDW280 - 10882 ✓	-23-25-27-29-31-33	[redacted]	SEE DWG	LDW 280 - 53162	C2
10864 ✓	-15 21	[redacted]			C3
10651	-13 15	[redacted]			C1
11074	-11-13-15	[redacted]			B1
110[illegible]	-11-13-15-17-19	[redacted]			B1
11076	-11-13-15-17-19	[redacted]			B1
12136	-11-13-15	[redacted]			B1
11077	-11-13-17-19-21	[redacted]			B1
11078	-11-13-15-17-19	[redacted]			B1
LDW280 - 11079	-11-15-17-21-23	[redacted]	SEE DWG	LDW280-53162	B1

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD #3587 [redacted] PKG 13 Pg. 13 & 14 (5)

REASON FOR EO: CONFIGURATION CHANGE To LM-15

DESCRIPTION OF EO: FOR [redacted] (#- [redacted] **) REMOVED [redacted] LM-15 (45) EFF.

GAEC EO RELEASE: 7-18-69; 7/28/69

MODEL	EFFECTIVITY PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO ☐
DISPOSITION OF PARTS: REWORK ☐ SCRAP ✓

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	CCB
APPROVED BY								
DATE	7/8/69 VDI			7-8-69	7/10/69		7/10/69	7-26-69

PRIORITY: C
DRAWING TITLE: SEE DRAWING
DRAWING NO.: LEO-280
EO NO.: 1492

8-15-69
ISSUED BY GEO. W. ROCKLEIN X86048 4/25/69 (ML) SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-10885 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NC.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28162	LEM2(32)	1EA
LEM	LDW280-28162	LEM-1(31)	1EA
LEM	LDW280-28162	LTA-8(18)	1EA
PART NO. LDW280-10885-11 & -15		GAEC SCH NO. 30 SH-2	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A			
		PRIM NO.			
LAST DASH NO. USED	-15	215			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 LINE ITEM #1 DOCUMENTATION TYPE II

DRAWN BY	D.FEINER 4-22-66		
LAYOUT BY			
CHECKED BY			
GR LEADER	P.HENTON 4-22		
VEH DES INT	L.PAULSRUD 4-22		
STRUCTURE	RJPJV FEB 4-23	PROJ ENGR	J.ALBER 4-26
STRUCTURE	HILDERMAN 4-23	REL GROUP	C.BOTTI 4-28-66
WEIGHTS	D.ROBESCH 4-26		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CAPSTRIP
ASCENT STAGE-MID SECTION-LOWER
THERMAL SHIELD -Z225.38 R.H.

SIZE	CODE IDENT NO.		
B	26512	LDW280-10885	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

SUPERSEDES LDW280-10885 NO CHANGE 7-29-66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE LAST REV NO CHANGE SH 1.00 OF4 WAS SH 1.00 OF 3.00 LOFTED DWG WAS DIMENSIONED	E. SICK		7-29-66			
A	1	1.00,1.10 2.00,3.00					✓	EO A1	DELETED -13, ADDED -15	LTA-8 LEM-1 THRU-6		-13	E.SICK 7-29-66		
	2	1.00,1.10							ON-11 & -15, REMOVED LEM-3 THRU LEM-6 EFF.	LEM-3-4-5-6	-	-11 & -15	JAE561 3-14-66		

CHG APPROVED

LTR	GROUP LDR

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10885	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10885-15	E	CAP STRIP	AL ALLOY SH	QQ-A-250/12	7075	.032×2 1/4×11 7/8	T6	88	
		LDW280-10885-11	E	CAP STRIP	AL ALLOY SH	QQ-A-250/12	7075	.040×2 5/8×16 5/8	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP , BETHPAGE, L. I., NEW YORK

SIZE B

CODE IDENT NO. 26512

LDW280-10885

A

SCALE NONE

SHEET 2.00

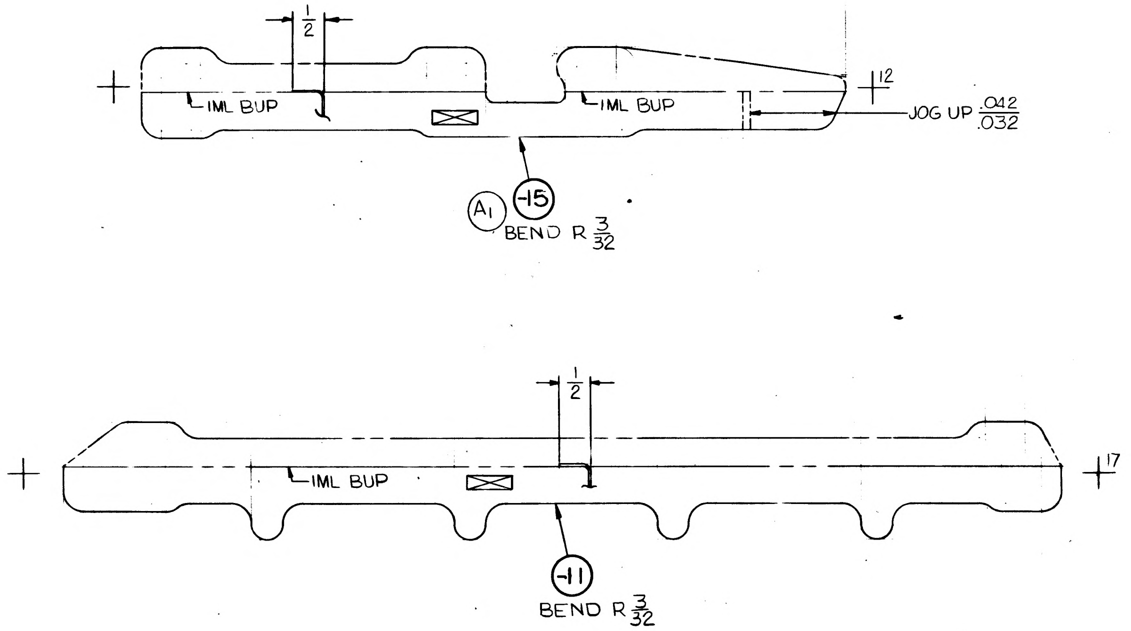
ENG 77.2 7-65

01

NAS 9-1100

LDW280-10885 A

NOTE
1. NO TOOLING HOLES PERMITTED IN PARTS.



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-10885A

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
	SIZE D	CODE IDENT NO. 26512	LDW280-10885	A
LEM				
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

01

NAS 9-1100

LDW280-10888 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53222	QUAL TEST(70)	1
		LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
		LM-4(34)	1
		LM-3(33)	1
		LM-2(32)	1
		LM-1(31)	1
LM	LDW280-53222	LTA-8(18)	1
PART NO. LDW280-10888-15		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
		QUAL TEST(70)	1 EA
LEM	LDW280-28222	LEM-2(32)	1 EA
LEM	LDW280-28222	LEM-1(31)	1 EA
LEM	LDW280-28222	LTA-8(18)	1 EA
PART NO. LDW280-10888-21,-23,-27, -31 & -33		GAEC SCH NO. 30	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO B	
LAST DASH NO. USED	-33	PRIM NO.	JL001)
		215	MP14B5-5-7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS-9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	J. KORYKORA 4/9/66		
LAYOUT BY	J. KORYKORA 4/9/66		
CHECKED BY			
GR. LEADER	P. HENTON 4/12/66		
VEH-DES-INT	W. BISCHOFF 4/12/66		
STRUCTURES	AJP/F. BUNCE 4/14/66	PROJ ENGR	J. ALBER/R.C. 4/19/66
STRUCTURES	R. HILDERMAN 4/14/66	REL GROUP	A. CARAMANICA 4/21/66
WEIGHTS	W. MANDRAS 4/16/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
(R.H) ASCENT STAGE - MID SECTION
ENGINE COMPARTMENT SHIELD

SIZE B
CODE IDENT NO. 26512
LDW280-10888 B
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-66

SUPERSEDES LDW280-10888 NO CHANGE 7-19-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE ~ LAST REV NO CHANGE SH1OF4 WAS SH1OF1 LOFTED DWG WAS DIMENSIONED DWG R. BUCARIA 7-19-66						
A	1	1.00, 1.10, 2.00 & 3.00		DCRF 323-1079					IN FIELD, MODEL BLOCK & B/M REMOVE -13, -17 & -19 ADDED -21 -23 & -25. IN MODEL BLOCK REMOVE LEM-3(33), LEM-4(34) LEM-5(35) & LEM-6(36).	LTA-8 LEM-1 LEM-2		-13 -17 -19	BUCARIA 7-19-66		
	2								IN FIELD, MODEL BLOCK & B/M REMOVED -11 ADDED -27			-11			
B	1	1.00, 1.10, 2.00 3.00					✓	E.O. B1	REMOVED -25 EFF LTA-8, LM-1 THRU LM-6. ADDED -29 EFF LTA-8, LM-1, LM-2 & QUAL TEST (70)	LTA-8, LM-1 THRU LM-6 QUAL TEST		-25	ART STERNBERG 3-29-67		
	2	1.00					✓	LEO-280-317	ADDED QUALIFICATION REQUIREMENTS FOR -21 & -23	QUAL TEST	NOT	REQD			
	3	1.00, 1.10, 2.00, 3.00					✓	EO B3	IN FLD & B/M REMOVED -29, ADDED -31	LM-1, 2, LTA-8 QUAL TEST		-29			
	4	1.00 1.10, 2.00 3.00						EO B4	REMOVED -23 AND ADDED -33	LTA-8, LM-1 & LM-6 & QUAL TEST		-23			
	5	1.00, 1.10					✓	LEO-280-354	ADDED LM-3 (33) THRU LM-15 (45) & QUAL TEST (70) REQUIREMENTS FOR -15	LM-3 THRU LM-15 QUAL TEST	NOT	REQD			
	6	1.10 & 1.00					✓	LEO-280-396	ON -27 ADD "QUAL TEST"	QUAL TEST					
	7	1.00, 1.10 2.00 & 3.00						EO B7	REF EO B4 IN FLD, TRIM OF -33 WAS -29. EFF LTA-8 QUAL TEST, LM-1 & LM-2 WAS LTA-8 LM-1 & LM-6 AND QUAL TEST	LTA-8, LM-1, LM-2 LM-6 QUAL TEST					
	8	1.10 1.00							REF EO B7 "EFF SHOULD BE LTA-8, LM-1, LM-2 & QUAL TEST	LTA-8, LM-1, 2 QUAL TEST					

FOR CONTINUATION OF REVISIONS SEE SHEET ________

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10888	B
SCALE	NONE		SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10888-27	E	ANGLE	AL ALLOY SH	QQ-A-250/13	7075	.050×2 1/8×7 3/8	T6	88	
		LDW280-10888-31	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.070 X 3 3/4 X 2 1/4	-T6	88	
		-33		DOUBLER		QQ-A250/4	2024-T3	.050 X 4 3/8 X 6	NONE		
		-21		ANGLE		QQ-A250/12	7075	.025 X 2 X 7	-T6		
		LDW280-10888-15	E	ANGLE	AL ALLOY SH	QQ-A-250/13	7075 CLAD	.050 X 2 X 5 3/8	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						-T6	AL HEAT TREAT	MIL-H-6088

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

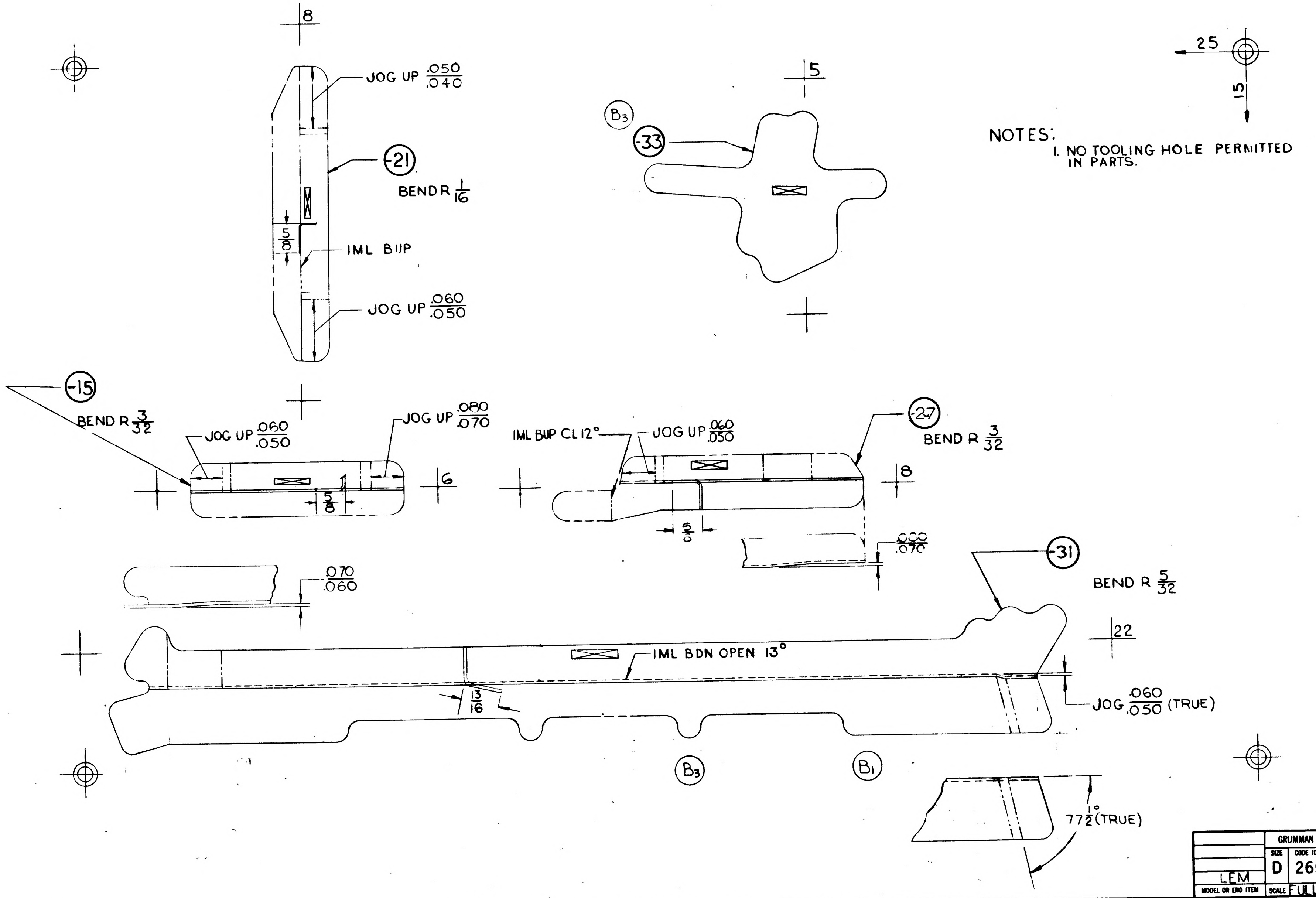
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-10888 B
Ⓑ
SCALE NONE
SHEET 2.00

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLE PERMITTED IN PARTS.


8
JOG UP .050/.040
(21)
BEND R 1/16
5/8
IML B/UP
JOG UP .060/.050
5
(B3)
(33)
25
15
(15)
BEND R 3/32
JOG UP .060/.050
JOG UP .080/.070
5/8
6
IML B/UP CL 12°
JOG UP .060/.050
(27)
BEND R 3/32
8
5/8
.080/.070
(31)
BEND R 5/32
.070/.060
22
IML BDN OPEN 13°
13/16
JOG .060/.050 (TRUE)
(B3)
(B1)
77 1/2° (TRUE)

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	√

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK
MODEL OR END ITEM LEM
SIZE D
CODE IDENT NO. 26512
LDW280-10888 B
SCALE FULL
SHEET 3.00

FOR PHOTO REPRODUCTION

K4

LDW280-10888 B

01

NAS 9-1100

01 NAS 9-1100

GMB 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER *

DWG. NO. LEO-280	EO NO. 508
CONTROL INFO NO. LDW280A-5716	

IN MODEL BLOCK - ADD PA-1(W5) EFFECTIVITY

PART NO. **	QTY. PER ASSY.	CHANGE NO	NEXT ASSEMBLY
LDW280M10886 -1	1	A3	LDW280-53203
LDW280M11171 -3	1	A9	
-5	1		
LDW280M11171 -7	1		
LDW280M11229 -11	1	A2	
LDW280P11490 -17	1	A7	
LDW280-11655 -11	2	A1	
-12	2		
-13	1		
-14	1		
LDW 280-11655 -15	1		
LDW280-11663 -11	1	A1	
-13	6		
-15	1		
LDW280-11663 -17	1		
LDW280-11664 -11	1	A1	
-13	3		
-15	1		
-16	1		
-17	1		
LDW280-11664 -18	1		
LDW280-11665 -11	1	A1	
LDW280-11666 -11	1	A3	
LDW 280-11666 -12	1		
LDW280-11766 -19	1	B3	
LDW280-11766 -31	1		LDW280-53203
LDW280-53203-1	1	A5	LTM 280-26876
LDW280-53222-1	1	C4	LTM 280-26876
LDW280-10847-21	1	B5	LDW 280-53222
LDW280-10847-25	1		
LDW280-10848-11	1	C1	
-13	1		
-15,-17	2 EA		
LDW280-10848-23-3	1 EA		
LDW280-10849-19,-31	1 EA	C5	
LDW280-10849-25,-27	1 EA		
LDW280-10888-15	1	C1	
LDW280-11248-23	1	A4	
-13,-17	1 EA		
LDW280-11248-21	1		
LDW280-11250 -11,	1	A2	
LDW280-11250 -13,-23	1 EA		
LDW280-11251-11,-13	1 EA	A1	
-15	1		
LDW280-11251-17,-19	1 EA		
LDW280-11252-13	1	A3	
LDW280-11253-11	1	A1	
LDW280-11253-13	1		
LDW280-11259-15	1	A3	
-17	1		
LDW280-11368-13	1	B1	
-15	1		
LDW280-11368-17	1		LDW 280-53222

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐ LCR 19-1124 5

REASON FOR EO: TO ADD PA-1(W5) EFF. AND NEXT ASSEMBLY

DESCRIPTION OF EO: ADDED PA-1(W5) EFF.

GAEC EO RELEASE: JK 3/11/67

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOTED	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REWORK REQD SCRAP

APPROVED BY				GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
DATE	3/7/67	3/7/67		3/7/67			3/8/67	3/11/67
5	VDI	SUPPORT	RELIAB. GROUP				Dam	

PRIORITY: C

DRAWING TITLE: SEE DWG.

DRAWING NO.: LEO-280

EO NO.: 508

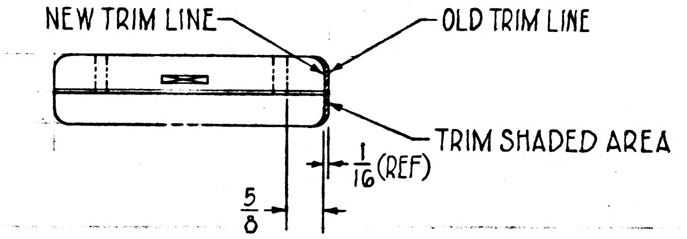
ISSUED BY GMGREEN / PAUL HENTON X1153 SECTION V.D.I. GROUP NO. 335 PL 35

PNG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10888
EO NO. C3
CONTROL INFO NO. LM3-5999

ON-15 IN FLD.



DETAIL SPEC REQ	☐	CL II ENGRG CHG	✓	CL I ENGRG CHG	☐

(3)

REASON FOR EO: TO PROVIDE BETTER FIT ON ASSEMBLY

DESCRIPTION OF EO: ON-15 IN FLD. REVISED TRIM

GAEC EO RELEASE: (12) JK

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-5(35) THRU	LM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK ✓ SCRAP

APPROVED BY	Jap			—	BM		Jap	
DATE	3/6/68			—	2-26-68	2-29-68	3/6/68	3/1/68
	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C_3
DRAWING TITLE: ANGLE (R.H.) A/S-M/S ENGINE COMPARTMENT SHIELD
DRAWING NO. LDW280-10888
EO NO. C3

ISSUED BY LIAISON V.BOLLO/G.DIEHL (x2151) 2-23-68 MB SECTION V.D.I. GROUP NO. 335 PL 25

01 NAS 9-1100

LDW280-10889 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28222	QUAL TEST(70)	1
LEM	LDW280-28222	LEM-2(32)	1
LEM	LDW280-28222	LEM-1(31)	1
LEM	LDW280-28222	LTA-8(18)	1

PART NO. LDW280-10889-21,-23;25;31 & -29

GAEC SCH NO. 30

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10		2.00		3.00			
REV	B	B		B		B			
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -31

GRUMMAN REL INFO B

PRIM NO. -215 ✓K(001) ME-168-11/4/K

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS-9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY	KORYKORA 4-9-66	RELIABILITY	
LAYOUT BY	KORYKORA 4/9/66		
CHECKED BY			
GRP LEADER	P.HENTON 4/12		
VEH DES INT	W. BISCHOFF 4/12		
STRUCTURES	AP FEB 4/14	PROJ ENGR	J. ALBER 4/19/66
STRUCTURES	HILDERMAN 4/14	REL GROUP	BOTTI 4/21/66
WEIGHTS	MANDRAS 4/16		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
RIGHT HAND~ASCENT STAGE~MID SECTION
ENGINE COMPARTMENT SHIELD

SIZE B

CODE IDENT NO. 26512

LDW280-10889 B (7)

SCALE NONE

SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-10889' NO CHG 7-19-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
		3.00							RETRACED NO CHANGE LAST REVISION 'NO CHANGE' SH 1.00 OF 4 WAS SH 1.00 OF 1, LOFTED DWG WAS DIMENSIONED DWG B.ONEILL 7-18-66						
A	1	1.00, 2.00 3.00		DCRF 323-1079					IN FIELD & MODEL BLOCK REMOVE -11; 13; 15; 17 & -19 ADDED -21 -23 -25 -27 & -29 IN MODEL BLOCK REMOVED LEM-3(33), LEM-4(34) LEM-5(35) & LEM-6(36)	LTA-8 LEM-1 LEM-2		-11 THRU -19	ONEILL 7-19-66	[illegible]	
B	1	1.00, 1.10					✓	LE0280-317	FOR -21, -23, -25, -27 & -29, ADDED QUALIFICATION TEST REQUIREMENTS	LTA-8(18), LM-1, LM-2, QUAL TEST	NOT	REQ'D	E. COX 10-10-68		
	2	1.0, 1.10 2.00, 3.00						EOB2	ADDED -31 REMOVED -27	LM-1(31) LM-2(32) LTA-8(16) QUAL TEST(70)		-27			
	3	1.00, 1.10 2.00, 300						EOB3	TRIMMED -31, ADDED E.O. TO RECORD BLOCK FOR LTA-8(18)	LTA-8(18) LM-1(31) LM-2(32)	-31				
	4							EO B4	CANCELLED BY E.O. B5		NOT	REQ'D			
	5							EO B5	CANCELLED EOB4		NOT	REQ'D			
	6	1.10							ON EOB3 "PARTIAL RECORD E.O. FOR LTA-8 & QUAL TEST ONLY, THIS CHANGE NOT TO BE INCORPORATED ON LTA-8 & QUAL TEST" WAS "PARTIAL RECORD E.O. FOR LTA-8 ONLY, THIS CHANGE NOT TO BE INCORPORATED ON LTA-8". EC	LTA-8(18) QUAL TEST (70)				[illegible] 10-17-68	[illegible]

CHG. APPRO. LTR	GROUP LDR	VDI	STRUCT.	STRUCT.	WEIGHTS	MAT'LS	PROJ.	THERMO
B	[illegible] 10/21/68	[illegible] 10/22/68		[illegible] 10/22/68				[illegible] 10/25/68

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	DWG NO.	REV
B	26512	LDW280-10889	B

SCALE NONE

SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10889-29	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.050 × 2 1/8 × 13	T6	88	
		-31	↕	CHANNEL	↕	↕	↕	.050 × 3 5/8 × 18 3/4	↕	↕	
		-25	↕	ANGLE	↕	↕	↕	.025 × 2 × 5 7/8	↕	↕	
		-23	↕	ANGLE	↕	↕	↕	.025 × 2 × 6 1/4	↕	↕	
		LDW280-10889-21	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.025 × 2 × 6 3/4	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10889	B

SCALE NONE

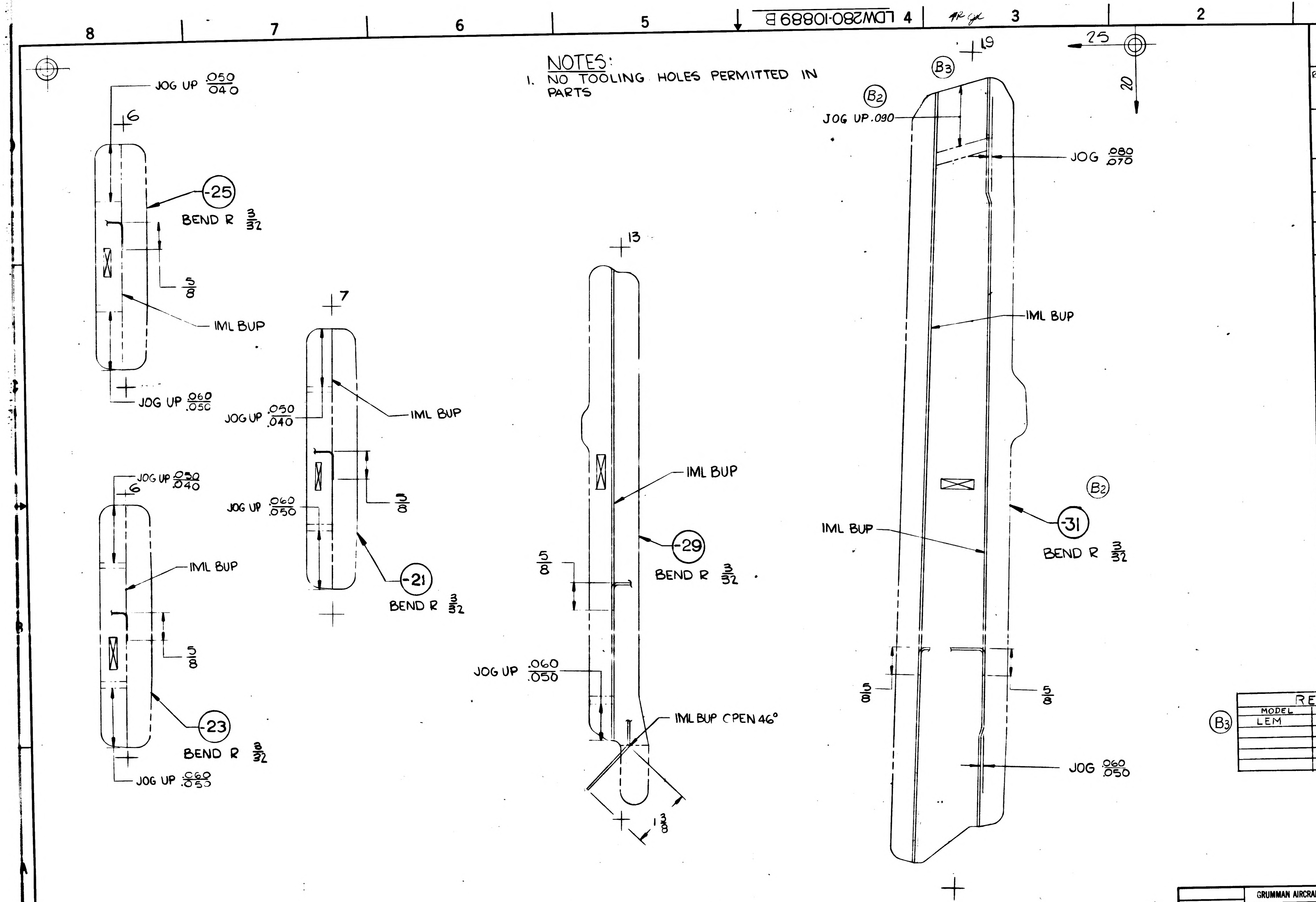
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS



8
7
6
5
4 LDW280-10889 B
3
2
1
JOG UP .050/.040
6
-25
BEND R 3/32
5/8
IML BUP
JOG UP .060/.050
JOG UP .050/.040
6
IML BUP
5/8
-23
BEND R 3/32
JOG UP .060/.050
7
JOG UP .050/.040
IML BUP
JOG UP .060/.050
5/8
-21
BEND R 3/32
13
IML BUP
-29
BEND R 3/32
5/8
JOG UP .060/.050
IML BUP OPEN 46°
1 3/8
19
B3
B2
25
20
JOG UP .090
JOG .080/.070
IML BUP
IML BUP
B2
-31
BEND R 3/32
5/8
5/8
JOG .060/.050

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ [redacted].	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

RECORD DATA

MODEL	EO NO	EFFECTIVITY
LEM	B3	LTA-8(13) & QUAL TEST

B3

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-10889	B
	SCALE FULL		SHEET 3.00	

2 FOR PHOTO REPRODUCTION 1

K2

NAS 9-1100

LDW280-10890 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28203	LEM-2(32)	1
LEM	LDW280-28203	LEM-1(31)	1
LEM	LDW280-28203	LTA8(18)	1
PART NO. LDW 280-10890-13		GAEC SCH NO. 30	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00				
REV	A	A	A	A				
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED

LAST DASH NO. USED -13

GRUMMAN REL^c INFO_A

PRIM NO.	LE(001)	
215	MP-A	9-22-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.030 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM I
DOCUMENTATION TYPE II

DRAWN BY	NOTO	RELIABILITY	
LAYOUT BY		THERMODYNAMICS	A. HERTZ
CHECKED BY	CNB		
GR LEADER	P HENTON 4-13		
VEH DES INT	W. BISCHOFF 4-13		
STRUCTURES	AP JV FEB 4-14	PROJ ENGR	F DE SENO/RMC 7-19
STRUCTURES	HILDERMAN 4-14	REL GROUP	BOTTI 7-21-66
WEIGHTS	W. MANDRAS 4-16		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SHIELD
ASCENT STAGE MID SECTION ENGINE
COMPARTMENT - FWD - THERMAL

SIZE B | CODE IDENT NO. 26512 | LDW280-10890 | A

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-10890 NO CHANGE 7-21-66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
									REDRAWN NO CHG LAST REV NO CHG LOFTED DWG WAS DIM SHEET 1.00 OF 4 WAS 1.00 OF 1 ADDED SHEETS 1.10 2.00 & 3.00 Castellano	9-8-66					
A	1	1.00, 1.10 2.00, 3.00 & 4.00							DELETED-11 AND ADDED-13 EG	LTA-8 (18) LEM-1 (31) LEM-2 (32)		-11	Castellano 9-8-66	RMC	10-7-66

CHG APPROVED										
LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY				
A	9/14		9/15/66							

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10890	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10890-13	E	SHIELD	SEE NOTE 2	SEE NOTE 2	SEE NOTE 2	.020 X 24 X 44¼	CM	SEE NOTE 3	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						CM	CHEM-MILLING	LSP14-26100
						76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10890	A

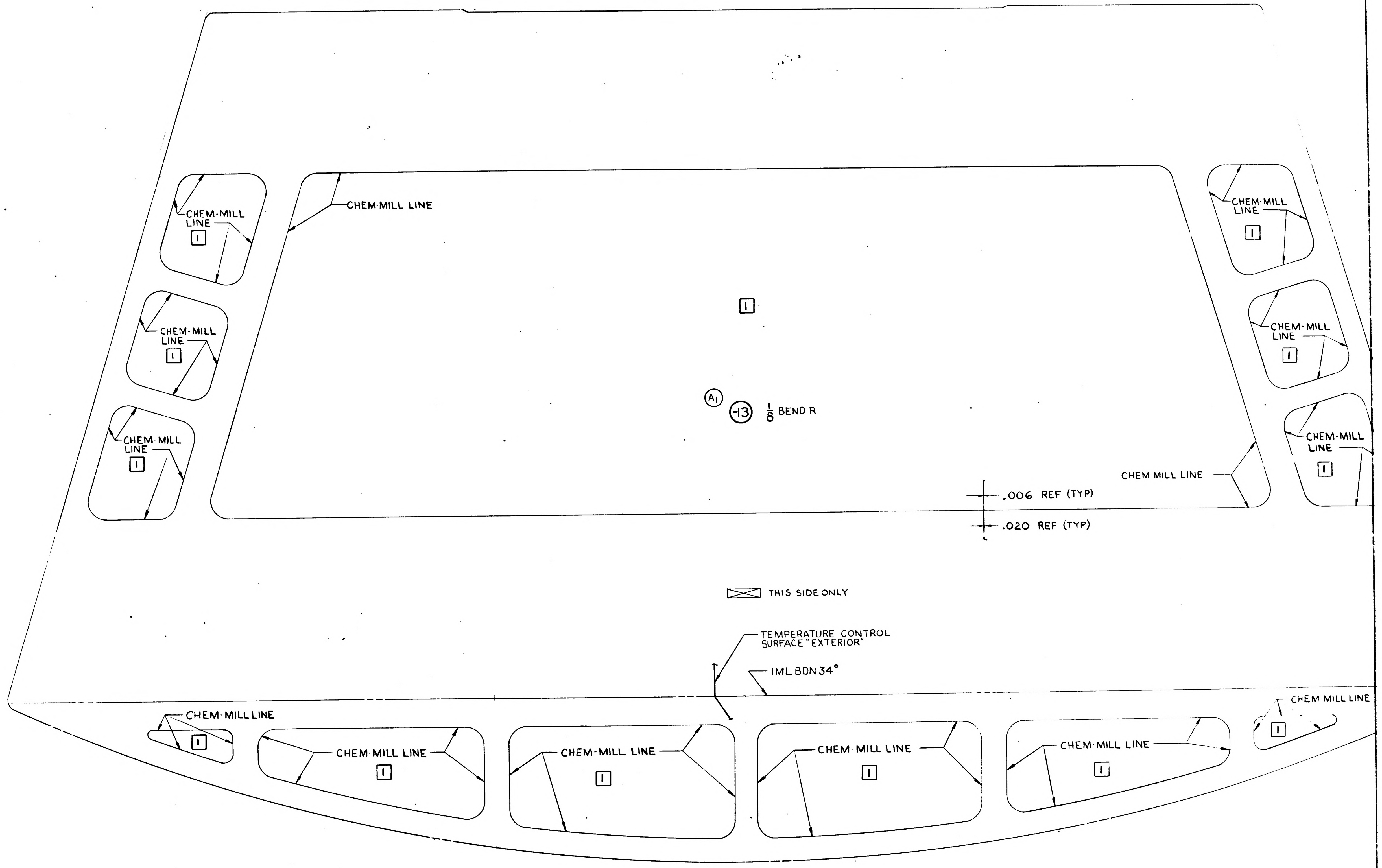
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


CHEM-MILL LINE
CHEM-MILL LINE
1
CHEM-MILL LINE
1
CHEM-MILL LINE
1
CHEM-MILL LINE
1
CHEM-MILL LINE
1
CHEM-MILL LINE
1
1
A1
-13
$\frac{1}{8}$ BEND R
CHEM-MILL LINE
CHEM MILL LINE
1
.006 REF (TYP)
.020 REF (TYP)
THIS SIDE ONLY
TEMPERATURE CONTROL SURFACE "EXTERIOR"
IML BDN 34°
CHEM-MILL LINE
1
CHEM-MILL LINE
1
CHEM-MILL LINE
1
CHEM-MILL LINE
1
CHEM-MILL LINE
1
CHEM-MILL LINE
1

01/02 NAS 9-1100

CODE IDENT NO. 26512
LDW280-10890 SH 3

2/6

GEOM Q.A.

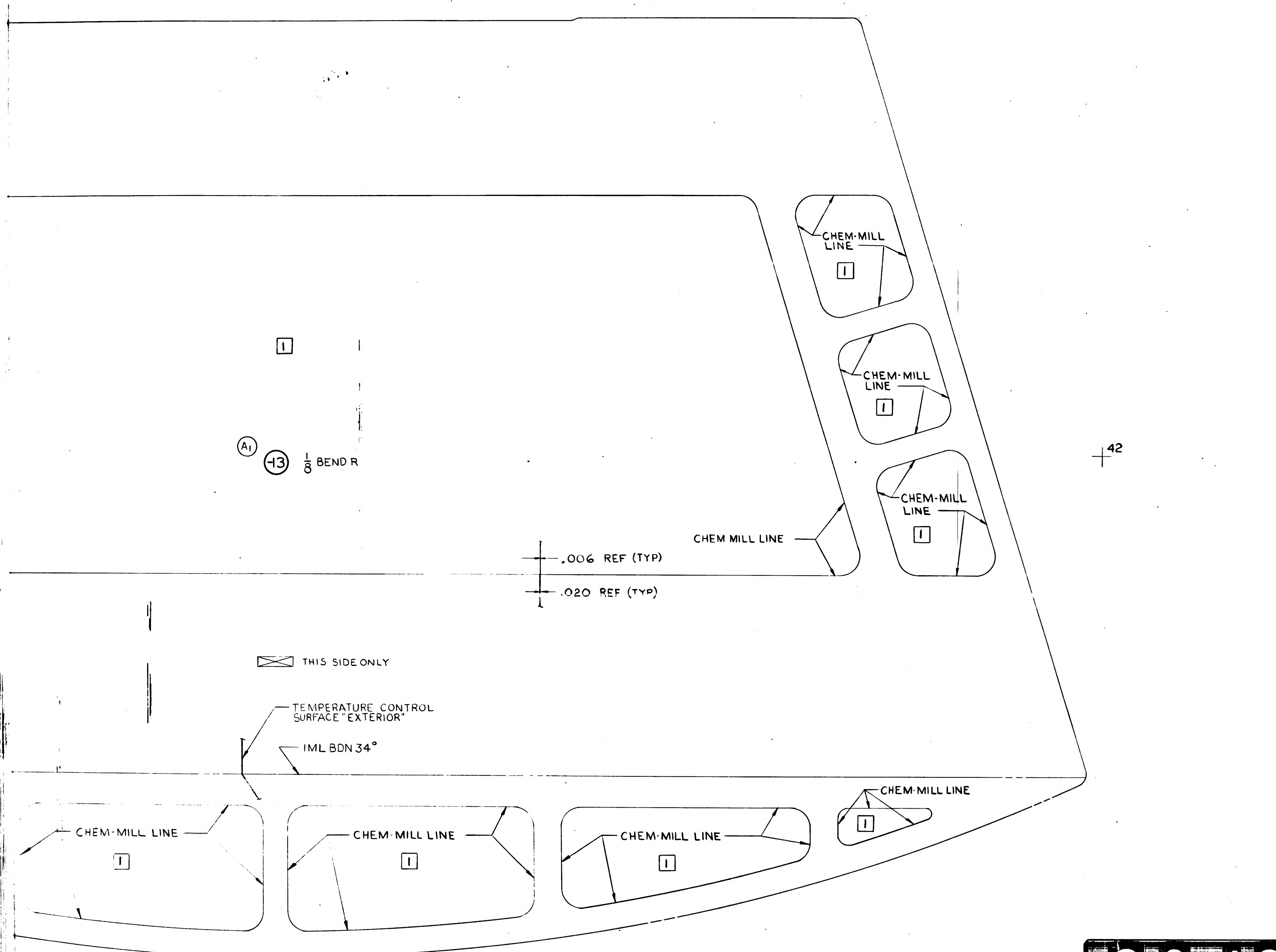
NOTES;
1. NO TOOLING HOLES PERMITTED IN PARTS
2. MAKE -13 FROM AL ALY CLAD SHT (SKIN QUALITY) 2024-T3 QQ-A-250/5 SURFACE DESIGNATED "EXTERIOR" TO BE PREFINISHED WITH ALUMALITE 200/R1/EB10, AND PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROLL PRODUCTS INC, FARMINGDALE L.I., N.Y.
3. INTERIOR SURFACE TO BE FINISH #76 (LSP 14-9010)
4. REMOVE FINISH ALUMALITE 200/R1/EB10 (ANODIZE) FROM INTERIOR SURFACE & FINISH AS NOTED
5. MATERIAL FOR -13 TO BE HAND SELECTED THICKNESS TO BE 020 ±.002

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 34 X 70

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 72) = 18.0 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 4.5 SQ. FT.

PRINT TRIM LINE



LDW280-10890-13

CHEM-MILL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	.006 $^{+.003}_{-.001}$	.014 (REF)

02/02 NAS 9-1100

LDW280-10890 A

LDW280-10890 A

CODE IDENT NO. 26512
LDW280-10890 SH 3

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	J	26512	LDW280-10890	A
	SCALE FULL		SHEET 3.00	

K2

FOR PHOTO REPRODUCTION

1

ENG 32.1 REV 3-65 *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10890
EO NO. B-1
CONTROL INFO NO. LM-3-4243

IN F/D, B/M, & M/B REMOVE CHEM-MILLED SKIN -13 AND ADD -15 IDENT. TO -13 EXCEPT FOR OMISSION OF CHEM-MILLING.

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

3

REASON FOR EO	DESCRIPTION OF EO	® GAEC EO RELEASE
TO EXPEDITE MANUFACTURE OF SHIELD ASS'Y.	REMOVED -13 & ADDED -15	LE

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8 (10)	
LM		LM-1 (31)	
LM		LM-2 (32)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓			-13
REVISE DWG	RECORD EO	REWORK	SCRAP

APPROVED BY	JAP	VJX.			RV		RMC	
DATE	11/15/66	11/16		11/14	10/24/66	10-31-66	11-1	10/31/66
10/31/66		VDI ~~SUPPORT~~ THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SHIELD ~ A/S ~ M/S ~ FWD ENGINE COMPARTMENT	LDW280-10890	B1

ISSUED BY LIAISON / V. BOLLO / D. COPPI SECTION VEH. DES. INT GROUP NO. 335 PL 35

01 NAS 9-1100

LDW280-10891 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28203	LM-2(32)	1
LM	LDW280-28203	LM-1(31)	1
LM	LDW280-28203	LTA-8(18)	1

PART NO. LDW280-10891-21

GAEC SCH NO. 30

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.

GAEC SCH NO.

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -21

GRUMMAN REL INFO A

PRIM NO.	LE(001)		
215	MP-14	A-12-27-6	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ± 1/32 ±.030 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY	NOTO 4/12/66	THERMO	A. KATZ 7/19
LAYOUT BY			
CHECKED BY			
GR LDR	HENTON 4/13		
VEH DES INT	BISCHOFF 4/13		
STRUCTURE	JV FEB 4/15	PROJ ENGR	J. ALBER/RMC 7/19
STRUCTURE	HILDERMAN 4/15	REL GROUP	BOTTI 7/21
WEIGHTS	MANDRAS 4/15		

Ⓡ GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT
SHIELDING~ASCENT STAGE-MID
SECT.~MID SECT~ENG. COMP~FWD~

SIZE B
CODE IDENT NO. 26512
LDW280-10891

SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-10891 'NO CHG' 7-21-66

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	APPD
											REWORK	SCRAP			
									RETRACED NO CHG LAST REVISION NO CHG. ADDED SH. 1.10, 2.00, 3.00.	JAEGGI	11-15-	66			
A	1	1.00, 1.10 2.00, 3.00						EO A1	REMOVED -11, -12, -13, -14, -15, -16, -17, & -19. ADDED -21 & REVISED NOTE #2 BY REMOVING .040 & .050 B.R. REQMTS.	LTA-8, LM -1 & -2		-11, -12, -13 -14, -15, -16 -17, & -19	JAEGGI 11-15-66	RMS	

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10891	A
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10891-21	E	SUPPORT	AL ALLOY SH	QQ-A-250/13	7075 AL CLAD	.032x6x42	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10891	A

SCALE NONE

SHEET 2.00

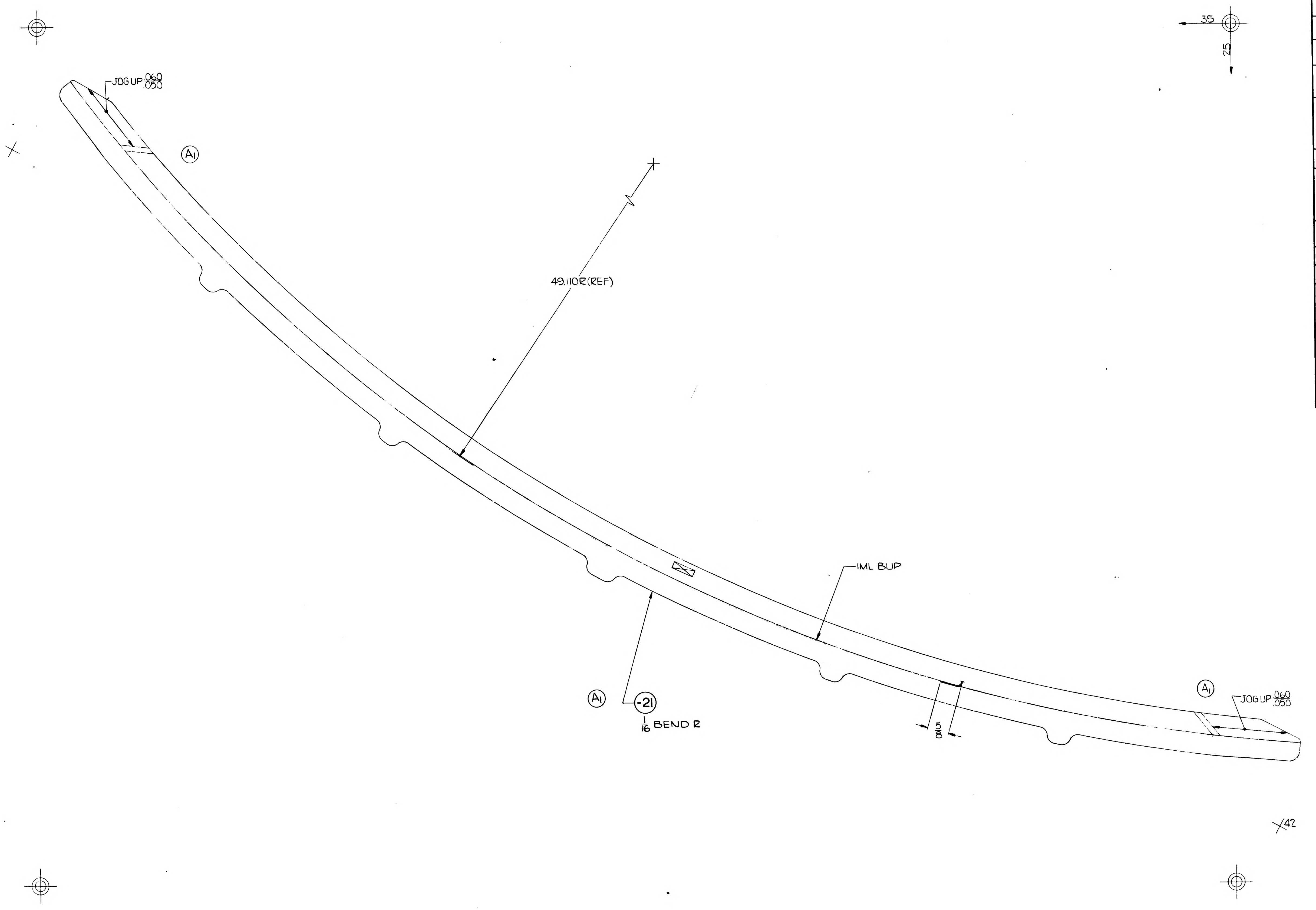
ENG 77.2 7-65

01

NAS 9-1100

TR OK
WM

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	√
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	√

LDW230-10891 A

LDW280-10891 A

01

NAS 9-1100

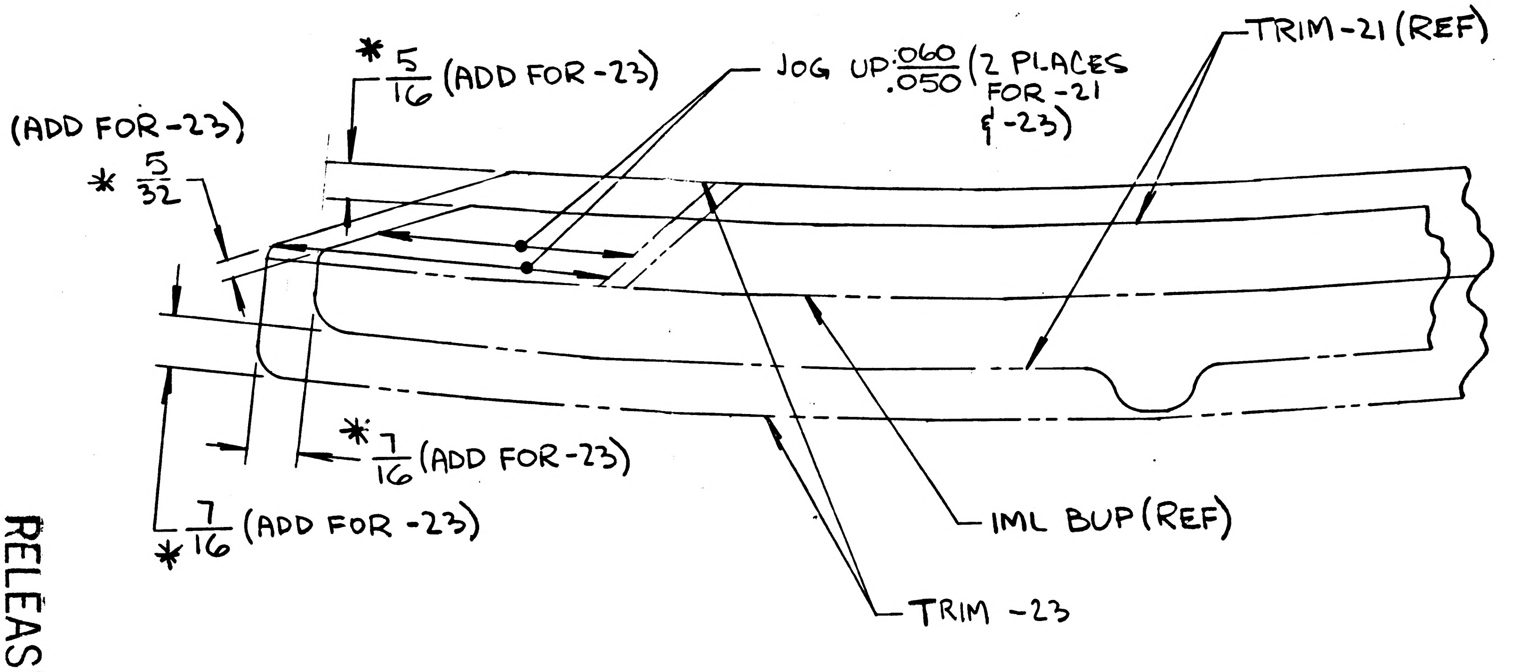
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK
LM
MODEL OR END ITEM
SIZE E
CODE IDENT NO. 26512
LDW280-10891
R A
SCALE FULL
SHEET 3.00

2 FOR PHOTO REPRODUCTION1
K2

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10891
CONTROL INFO NO. LM5-11912
EO NO. B2

FOR -21 REMOVE LM-1 & LM-2 FROM MODEL BLOCK & ADD -23 (IDENTICAL TO -21 EXCEPT AS SHOWN) N/A LDW280-28203, 1&T=E, 1REQD PER MODULE



TRIM-21 (REF)
JOG UP $\frac{.060}{.050}$ (2 PLACES FOR -21 & -23)
* $\frac{5}{16}$ (ADD FOR -23)
(ADD FOR -23) * $\frac{5}{32}$
* $\frac{7}{16}$ (ADD FOR -23)
* $\frac{7}{16}$ (ADD FOR -23)
IML BUP (REF)
TRIM -23

NOTE: DIMENSIONS MARKED * ARE TO BE APPLIED TO BOTH ENDS OF PART & ARE NOT TO BE ADDED TO LOFTED DWG. (FOR LAYOUT ONLY)

RELEASED BY LIAISON

DETAIL SPEC REQ
CL II ENGRG CHG
CL I ENGRG CHG
REASON FOR EO: REMOVEABLE ENGINE COMPART-MENT PANEL REQUIREMENT
DESCRIPTION OF EO: FOR-21 REMOVED LM-1 & LM-2 FROM M/B & ADDED -23

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-1 (31)	
LM		LM-2 (32)	

DRAWING CHANGE REQD: ✓
REVISE DWG: ✓
RECORD EO:
DISPOSITION OF PARTS: REWORK / SCRAP -21
APPROVED BY: ALW
DATE: 2/27/67
PRIORITY: C
SUPPORT: VDI
RELIAB GROUP:
GROUP LEADER:
STRESS GROUP: DV 2/27
LIAISON ENGRG: 2-27
PROJ ENGRG: RMC 3-2-67
EO RELEASE: JK
GAEC C
DRAWING TITLE: SUPPORT-SHIELD-ASCENT-MID SECT.-ENG. COMP.-FWD-THERMAL
DRAWING NO. LDW280-10891
EO NO. B2

ISSUED BY ART WILSON X6510 SECTION VDI GROUP NO. 335 PL 5

01 NAS 9-1100

ENG 32.1 REV 3-65 A

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER *

DWG NO. LDW280-10891
EO NO. B3
CONTROL INFO NO. LM5-13002

REMOVE LM-1 FROM -23 MODEL BLOCK

ADD -25 (IDENTICAL TO -23 EXCEPT REMOVE $\frac{.060}{.050}$ JOG UP 2 PLACES), N/A LDW280-28203, I&T = E, 1 REQD PER MODULE.

RELEASED BY LIAISON

DETAIL SPEC REQ	☐	CL II ENGRG CHG	✓	CL I ENGRG CHG	☐	5

REASON FOR EO: RELOCATION OF PART

DESCRIPTION OF EO: REMOVED LM-1 FROM -23 MODEL BLOCK & ADDED -25

GAEC EO RELEASE: C JK

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-1 (31)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			-23

APPROVED BY	WT	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
	ALW			3-14-67	CH 3-14-67	RMC 3.16.67	3/14/67
DATE	3/14						
1	VD1						

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SUPPORT-SHIELD-ASCENT-MID SECT.-ENG.COMP.-FWD-THERMAL	LDW280-10891	B3

ISSUED BY ART WILSON X6510 SECTION VD1 GROUP NO. 335 PL 5

01

NAS 9-1100

LDW280-10893 B

LM	LTM280-26902	PA-1(47)	3
LM	LDW280-28223	QUAL TEST(72)	3
LM	LDW280-28223	LM-2(32)	3
LM	LDW280-28223	LM-1(31)	3
LM	LDW280-28223	LTA-8(18)	3

PART NO LDW280-10893-12

LM	LDW280-28223	LM-2(32)	3
LM	LDW280-28223	LM-1(31)	3
LM	LDW280-28223	LTA-8(18)	3

PART NO LDW 280-10893-23

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LTM280-26902	PA-1(47)	2
LEM	LDW280-28223	LEM-2(32)	2
LEM	LDW280-28223	LEM-1(31)	2
LEM	LDW280-28223	LTA-8(18)	2
PART NO. LDW280-10893-21		GAEC SCH NO. 30	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28223	LEM-2(32)	1EA
LEM	LDW280-28223	LEM-1(31)	1EA
LEM	LDW280-28223	LTA-8(18)	1EA
PART NO. LDW280-10893-25-17-18 &-19-20		GAEC SCH NO. 30	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LTM280-26902	PA-1(47)	3
LEM	LDW280-28223	LEM-2(32)	3
LEM	LDW280-28223	LEM-1(31)	3
LEM	LDW280-28223	LTA-8(18)	3
PART NO. LDW280-10893-11		GAEC SCH NO. 30	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00
REV	B	B	B		B
SHEET					
REV					
SHEET					
REV					

LAST SECT LTR USED		GRUMMAN REL INFO B	
		PRIM NO.	JK(001)
LAST DASH NO. USED	-25	215	ME-310-12/2/18

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9 1100 | LINE ITEM #1 | DOCUMENTATION TYPE II

DRAWN BY	GENTILE 8/19/66	THER. DYN.	HERTZ 7/9
LAYOUT BY			
CHECKED BY	JB 8/23/66		
GRP. LDR	PHENTON 4/7		
V. D. I	BISCHOFF 4/7		
STRUCT	VISCONTI 4/13	PROJ ENGR	J ALBER 4/9
STRUCT	HILDERMAN 4/12	REL GROUP	BOTTI 7/21/66
WEIGHTS	EAMORTE 4/13		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

STIFFENER-SHIELDING
ASCENT STAGE - MID SECTION
ENGINE COMPARTMENT ACCESS THERMAL

SIZE B	CODE IDENT NO. 26512	LDW280-10893	B
SCALE	NONE	SHEET 1.00 OF 4	(B)

ENG 77.1 12-65

SUPERSEDES LDW280-10893 N/C 4/7/66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
		RETRACED		NO CHANGE LAST REVISION					N/C SH 1OF4 WAS 1OF1 ADDED SH1.00,2.00 & 3.00 LOFTED DWG WAS DIMENSIONED			GENTILE 8/19/66			
A	1	1.00, 1.10 & 3.00					✓	EOA1	REWORKED -17 & -18 BY ELIMINATING TABS	LEM-1 & -2 LTA-8 cjr	-17 & -18		GENTILE 8.19.66		
B	1	1.00, 2.00, 3.00					✓	EO B1	ADDED -23 & -25. REMOVED -13 & -15	LM-1, -2 & LTA-8		-13 -15			
	2	1.00					✓	LEO280-360	ADDED LM-3(33) THRU LM-15(45) & QUAL TEST REQUIREMENTS FOR -11, -12, -21, -23.	LM-3 THRU LM-15 QUAL TEST	NOT REQD		✓ B. Acunto J 11-27-68 E.C.G.		
	3	1.00					✓	LEO280-365	ON-12 ADDED QUAL TEST	QUAL TEST	NOT REQD				
	4	1.00					✓	LEO280-514 LCD1124	ON-11, -12, -21, -23 ADDED PA-1(W5) REQTS.	PA-1(47)	NOT REQD				
	5	1.00					✓	EOB5 LCD1124	REF EO B4, LEO280-514 REMOVED PA-1(47) EFF. FROM LDW280-10893-23	PA-1(47)		-23			
	6	1.00				✓		LEO280-667 LCD-1422	REMOVED N/A LDW280-53223. FROM -11, -12, -21 & 23.	LM-3 THRU LM-15 QUAL TEST		✓			

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10893	B
SCALE NONE			SHEET 1.10

ENG 77.3 5-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10893-21	E	PLATE	AL ALLOY SH	QQ-A-250/13	ALCLAD 7075	.040x1 1/2 x1 5/8	NONE	88	
								-20		STIFFENER				.032x 2 x6 3/8	T6		
								-19						.032 x 2 x6 3/8			
								-18						.032 x 1 3/4 x5 3/4			
								-17						.032 x 1 3/4 x5 3/4			
								-25						.032 x3 1/8 x 3 3/8			
								-23						.024x 2 x5 1/4			
								-12						.024x 2 x4 7/8			
								LDW280-10893-11	E	STIFFENER	AL ALLOY SH	QQ-A-250/13	ALCLAD 7075	.024x 2 x4 7/8	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP 14-9030
						T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10893	B
SCALE NONE			SHEET 2.00

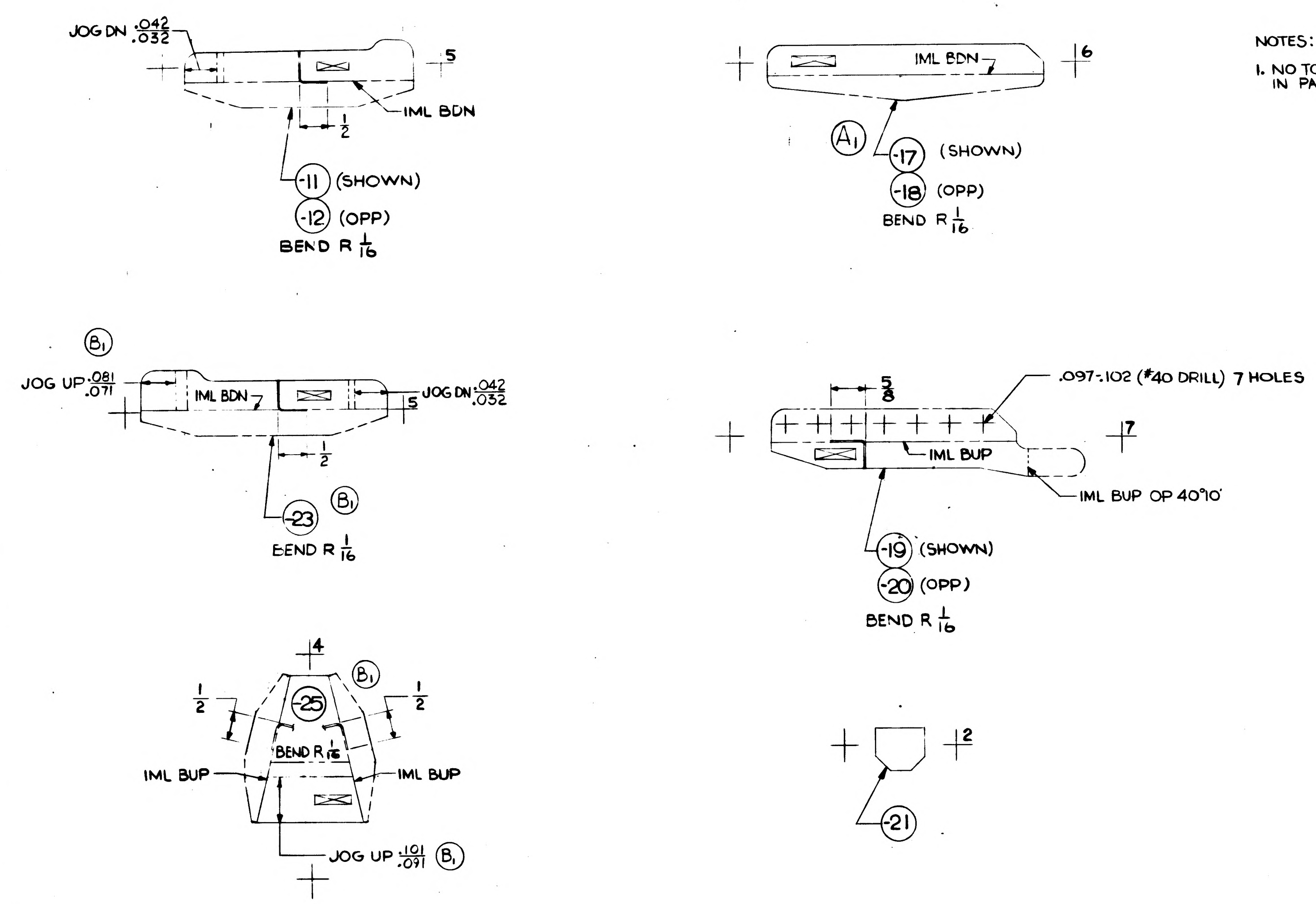
(B)

ENG 77.2 7-65

01

NAS 9-1100

LDW280-10893 B


JOG DN .042/.032
5
IML BDN
1/2
-11 (SHOWN)
-12 (OPP)
BEND R 1/16
IML BDN
6
A1
-17 (SHOWN)
-18 (OPP)
BEND R 1/16
B1
JOG UP .081/.071
IML BDN
JOG DN .042/.032
5
1/2
-23
B1
BEND R 1/16
5/8
.097-.102 (#40 DRILL) 7 HOLES
7
IML BUP
IML BUP OP 40°10'
-19 (SHOWN)
-20 (OPP)
BEND R 1/16
4
B1
1/2
-25
1/2
BEND R 1/16
IML BUP
IML BUP
JOG UP .101/.091
B1
2
-21

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 –	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ±1/32	√

LDW280-10893

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE D	CODE IDENT NO. 26512	LDW280-10893	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

2 FOR PHOTO REPRODUCTION 1

K2

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10894-22	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.063 X 2 X 3	T6	38	
		-21		ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.063 X 2 X 3	T6		
		-20		TEE	AL ALLOY EXTR	QQ-A-200/11	7075-T6511	DIE#33481 X 1	NONE		
		-19						DIE#33481X1	NONE		
		-18						DIE#33481X4 5/8	SEE NOTE 3		
		-17		TEE		QQ-A-200/11	7075-T6511	DIE#33481X4 5/8	SEE NOTE 3		
		-15		CLIP		QQ-A-200/3	2024-T3511	DIE#78J X 3/4	NONE		
		-14		TEE		QQ-A-200/11	7075-T6511	DIE#33481X 1 1/8	NONE		
		LDW280-10894-13	E	TEE	AL ALLOY EXTR	QQ-A-200/11	7075-T6511	DIE#33481X 1 1/8	NONE	38	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
38	ANODIZE	LSP14-9030
T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10894	B ③

SCALE NONE

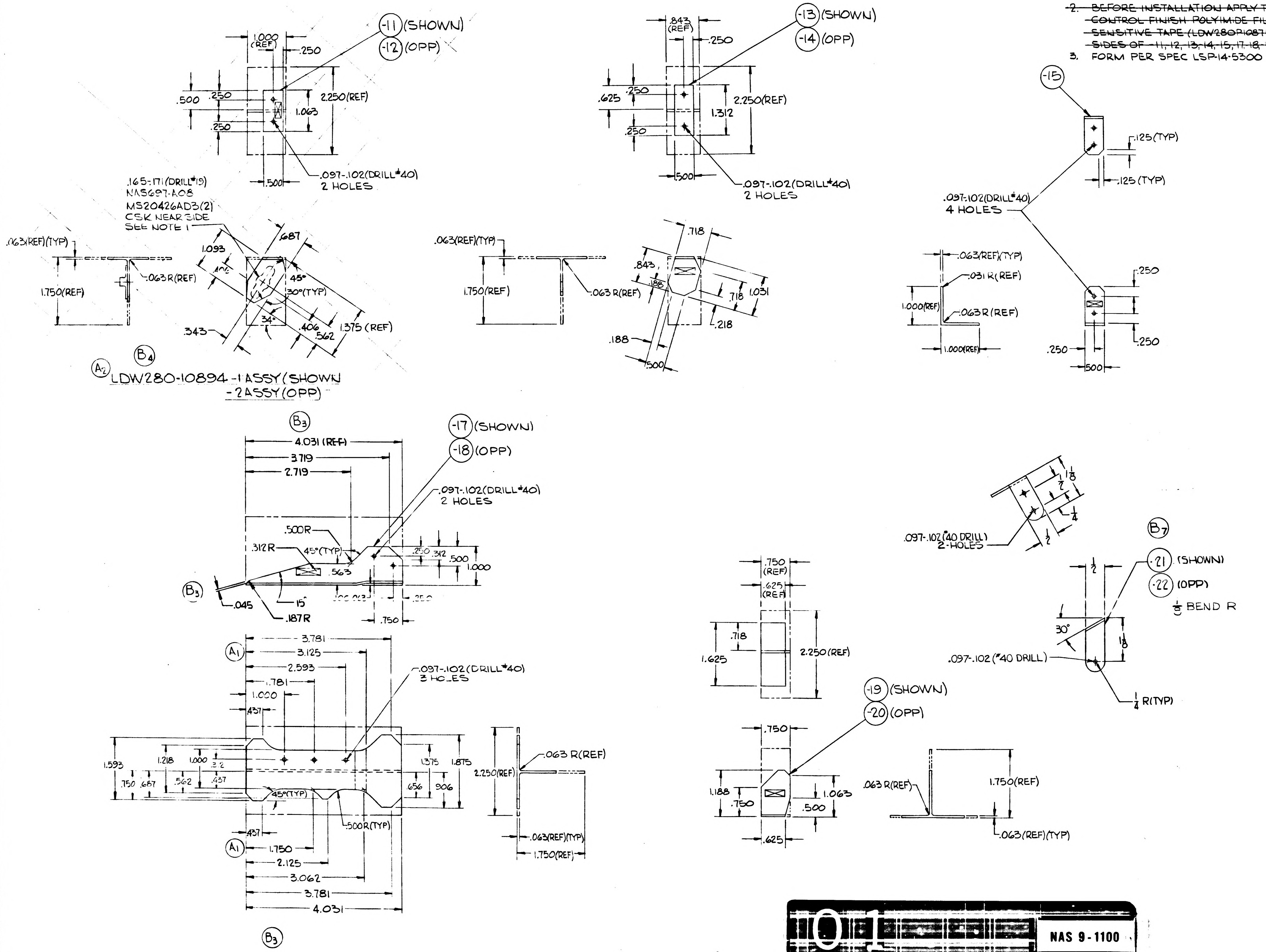
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. INSTALL FASTENERS PER LSP-14-15302.
~~2. BEFORE INSTALLATION APPLY TEMPERATURE CONTROL FINISH POLYIMIDE FILM PRESSURE SENSITIVE TAPE (LDW280P10871) TO EXTERIOR SIDES OF -11, 12, 13, 14, 15, 17, 18, 19 & 20~~
3. FORM PER SPEC LSP-14-5300 FOR -17 & -18



-11 (SHOWN)
-12 (OPP)
1.000 (REF)
.250
.500
.250
.250
2.250(REF)
1.063
.500
.097-.102(DRILL #40) 2 HOLES
-13 (SHOWN)
-14 (OPP)
.843 (REF)
.250
.625
.250
.250
2.250(REF)
1.312
.500
.097-.102(DRILL #40) 2 HOLES
.165-.171(DRILL #19)
NAS697-A08
MS20426AD3(2)
CSK NEAR SIDE
SEE NOTE 1
.063(REF)(TYP)
1.750(REF)
.063R(REF)
1.093
.687
45°
30°(TYP)
34°
.343
.406
.562
1.375 (REF)
A2
B4
LDW280-10894-1 ASSY (SHOWN)
-2 ASSY (OPP)
.063(REF)(TYP)
1.750(REF)
.063 R(REF)
.718
.843
.188
.718
1.031
.218
.188
.500
-15
.125(TYP)
.125 (TYP)
.097-.102(DRILL #40) 4 HOLES
.063(REF)(TYP)
.031 R(REF)
1.000(REF)
.063R(REF)
1.000(REF)
.250
.250
.250
.500
B3
-17 (SHOWN)
-18 (OPP)
4.031 (REF)
3.719
2.719
.097-.102(DRILL #40) 2 HOLES
.500R
.312R
45°(TYP)
.563
.250
.312
.500
1.000
.045
15°
.187R
.750
.250
A1
3.781
3.125
2.593
.781
1.000
.437
.097-.102(DRILL #40) 3 HOLES
1.593
1.218
1.000
.750
.657
.562
.437
45°(TYP)
1.375
1.875
.656
.906
2.250(REF)
.063 R(REF)
.500R(TYP)
.063(REF)(TYP)
1.750(REF)
A1
1.750
2.125
3.062
3.781
4.031
B3
.750 (REF)
.625 (REF)
.718
1.625
2.250(REF)
-19 (SHOWN)
-20 (OPP)
.750
1.188
.750
1.063
.500
.625
.063 R(REF)
1.750(REF)
.063(REF)(TYP)
.097-.102 (#40 DRILL) 2-HOLES
1 1/8
1/2
1/4
1/2
B7
-21 (SHOWN)
-22 (OPP)
1/8 BEND R
1/2
30°
1 1/8
.097-.102 (#40 DRILL)
1/4 R(TYP)

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

LDW280-10894

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE F	CODE IDENT NO. 26512	LDW280-10894	B
MODEL OR END ITEM LEM	SCALE FULL		SHEET 3.00

LDW280-10894 C

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LTM280-26902	PA-1(47)	1EA
LM	LDW280-53223	QUALTEST	1EA
		LM-15(45)	1EA
		LM-14(44)	1EA
		LM-13(43)	1EA
		LM-12(42)	1EA
		LM-11(41)	1EA
		LM-10(40)	1EA
		LM-9(39)	1EA
		LM-8(38)	1EA
		LM-7(37)	1EA
		LM-6(36)	1EA
		LM-5(35)	1EA
		LM-4(34)	1EA
	LDW280-53223	LM-3(33)	1EA
	LDW280-28223	LM-2(32)	1EA
	LDW280-28223	LM-1(31)	1EA
LM	LDW280-28223	LTA-8(18)	1EA
PART NO. LDW280-10894-19&-20		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LTM280-26902	PA-1(47)	1EA
LM	LDW280-28223	QUALTEST	1EA
LM	LDW280-28223	LM-2(32)	1EA
LM	LDW280-28223	LM-1(31)	1EA
PART NO.	LDW280-10894-21&22		
LM	LDW280-28223	QUALTEST	1EA
LEM	LDW280-28223	LEM-2(32)	1EA
LEM	LDW280-28223	LEM-1(31)	1EA
LEM	LDW280-28223	LIA-8(18)	1EA
PART NO. LDW280-10894-13,14		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LTM280-26902	PA-1(47)	2
	LDW280-53223	LM-15(45)	2
		THRU	
	LDW280-53223	LM-3(33)	2
	LDW280-28223	QUAL TEST	2
LM	LDW280-28223	LTA-8(18)	2
PART NO.	LDW280-10894-15		
LM	LTM280-26902	PA-1(47)	1EA
LM	LDW280-53223	QUALTEST	1EA
		LM-15(45)	1EA
		LM-14(44)	1EA
		LM-13(43)	1EA
		LM-12(42)	1EA
		LM-11(41)	1EA
		LM-10(40)	1EA
		LM-9(39)	1EA
		LM-8(38)	1EA
		LM-7(37)	1EA
		LM-6(36)	1EA
		LM-5(35)	1EA
		LM-4(34)	1EA
LM	LDW280-53223	LM-3(33)	1EA
LEM	LDW280-28223	LEM-2(32)	2 EA
LEM	LDW280-28223	LEM-1(31)	2 EA
LEM	LDW280-28223	LIA-8(18)	2 EA
PART NO. LDW280-10894-17,-18		GAEC SCH NO. 30	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	C	C	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL^c INFO C	
LAST DASH NO. USED	-20	PRIM NO. 215	JK(001) MP 14C-7/17/

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.010 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 | LINE ITEM #1 | DOCUMENTATION TYPE II

DRAWN BY	I. KLEIN 4/7/66	THERMODYN	R. FKERT 7/19/66
LAYOUT BY	A.P. NOTO 4/10/66		
CHECKED BY			
GP LDR	P. HENTON 4/12/66		
VEH DES INT	W. BISCHOFF 4/12/66		
STRUCTURES	AJP FB 4/12/66	PROJ ENGR	DE SEMA RMC 7/19
STRUCTURES	R. HILDERMAN 4/14/66	REL GROUP	C. BOTTI 7/21/66
WEIGHTS	D. ROBESCH 4/14/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TEE
ASCENT STAGE-MID SECT ENG COMPART.
ACCESS THERMAL SHIELD

SIZE	CODE IDENT NO.		
B	26512	LDW280-10894	C
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

SUPERSEDES LDW280-10894 NO CHG 8-25-66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
									RETRACED NO CHANGE LAST REV N/C J.GARRAFFO 8-25-66 SH 1.00 OF 4.00 WAS SH 1 OF 1, ADDED SHEETS 1, 1.10 & 2.00						
A	1	1.00, 1.10						EO A1	ON -17 & -18 MOVED DIM 1.750 & 3.125 TO END OF PART	LEM-1, LEM-2	✓		J. GARRAFFO		
	2	2.00 & 3.00						®	ADDED -1, -2, -3 & -4 ASSY	LTA-8					
	1	1.00, 1.10						EO-B1	IN M/B; FOR -1, 2-REQ'D WAS 1-REQ'D, FOR -2, 1-REQ'D WAS 2-REQ'D	LTA-8, LM-1-2		-2	V. SIBILLA 6-23-67		
	2	1.10 3.00	2H					EO-B2	IN FLD. REMOVED NOTE #2		✓				
	3	1.00, 1.10, 2.00, 3.00	7D					EO-B3	IN FLD B/M & M/B REMOVED -3 & -4 N/A OF -17 & -18 IS LDW280-28223 TRIMMED -17 & -18 ADDED .045 DIM 3/16 & 5/16 R. & 15° ANGLE			-3 & -4			
	4	1.00, 1.10, 2.00, 3.00,	7F					EO-B4	IN FIELD B/M & M/B REMOVED -1 & -2 ASSY			-1 & -2			
	5	1.00, 1.10					✓	LEO280-360	ADDED LM-3(33) THRU LM-15(45) & QUAL TEST REQUIREMENTS FOR -17; 18; 19; -20	LM-3 THRU LM-15, QUAL TEST	NOT	REQ'D			
	6	1.00, 1.10					✓	LEO280-365	ON -13 -14 & -15 ADDED "QUAL TEST"	QUAL TEST					
	7	1.00, 1.10, 2.00, 3.00	3D				✓	EO-B7	DELETED LM-1(31) & LM-2(32) REQ'TS FOR -15 ADDED -21 & -22 N/A LDW280-28223 EFF LM-1 & LM-2 & QUAL TEST AS	LM-1, LM-2, QUAL TEST		-15			
C	1	1.10 1.00						LEO280-483	FOR -15 ADDED LM-3 THRU LM-15 EFF	LM-3 THRU LM-15	NOT	REQD			
	2	1.00					✓	LEO280-514 LCD-1124	ON -15, -17, -18, -19 & -20 ADDED PA-1(W5) REQTS	PA-1(W5)					
	3	1.00					✓	EO C3 LCD-1124	IN MOD BLOCK ON -21 & -22 ADDED LTM280-26902, EFF PA-1 (47), 1 REQD EA	PA-1 (47)					
	4	1.00							REF LEO 280-483: SHOULD INCLUDE N/A LDW280-53223 2 REQD/MODULE	LM-3 THRU LM-15					
	5	1.00					✓	LCD-1124	REF LEO280-514: PA-1(47) WAS PA-1(W5)	PA-1 (47)					

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	THERMODYN
A	6/30					
C		7/16				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10894	C
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

C E.R.

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 667
CONTROL INFO NO. LDW280A-8132

REMOVE N/A FOR THE FOLLOWING DWG'S LISTED BELOW.

DWG NO	*N/A	EFF	TITLE	CHANGE NO.
LDW280-10681-13	LDW280-53224	QUAL TEST, LM-3 THRU LM-15	SEE DWG	B5
LDW280-11777-11		LM-3 THRU LM-15		B3
LDW280-11530-11 & -13		QUAL TEST, LM-3 THRU LM-15		B1
LDW280-10682-13		QUAL TEST, LM-3 THRU LM-15		
LDW280-10682-17		QUAL TEST LM-3 THRU LM-15		B7
LDW280-10682-19		QUAL TEST LM-3 THRU LM-15		
LDW280-10682-20		QUAL TEST LM-3 THRU LM-15		
LDW280-10682-17-1	LDW280-53224	LM-3 THRU LM-15		
LDW280-10682-17	LDW280-28224	LM-2		
LDW280-10690-19	LDW280-53223	LM-3 THRU LM-15		B1
LDW280-10893-11 & -12, -21, -23		LM-3 THRU LM-15, QUAL TEST		B6
LDW280-10894-17 & -18, -19 & -20		LM-3 THRU LM-15 QUAL TEST		D1
LDW280-10894-15	LDW280-53223	LM-3 THRU LM-15		
LDW280-53224	LDW280-53153	LM-3 THRU LM-15		A9
LDW280-11254-11 & -13	LDW280-53223	LM-3 THRU LM-15		A3
LDW280-11255-11, -13 & -14, -15, -17, -19, -21 & -22		LM-3 THRU LM-15		A3
LDW280-11659-11 & -13		LM-3 THRU LM-15		A3
LDW280-11279-11, -13, -15, -17	LDW280-53223	LM-3 THRU LM-15		A3
LDW280P11669-11,-13,-15	LDW280-53153	LM-3 THRU LM-15		A4
LDW280P11670-15, -16		LM-3 THRU LM-15		A4
LDW280P11768-11,-13,-15,-17		LM-3 THRU LM-15		A3
LDW280P11723-11,-13,-15,-17		LM-3 THRU LM-15		A3
LDW280P11724-13	LDW280-53153	LM-3 THRU LM-15	SEE DWG	A3

E.R.

DEV/SPEC REQ		CL II ENGRG CHG		C I ENGRG CHG	✓	LCD-1422

5

REASON FOR EO	DESCRIPTION OF EO	Ⓡ GAEC EO RELEASE
ROTATE ASCENT ENGINE 180°	REMOVED N/A *	JK 7/31/7

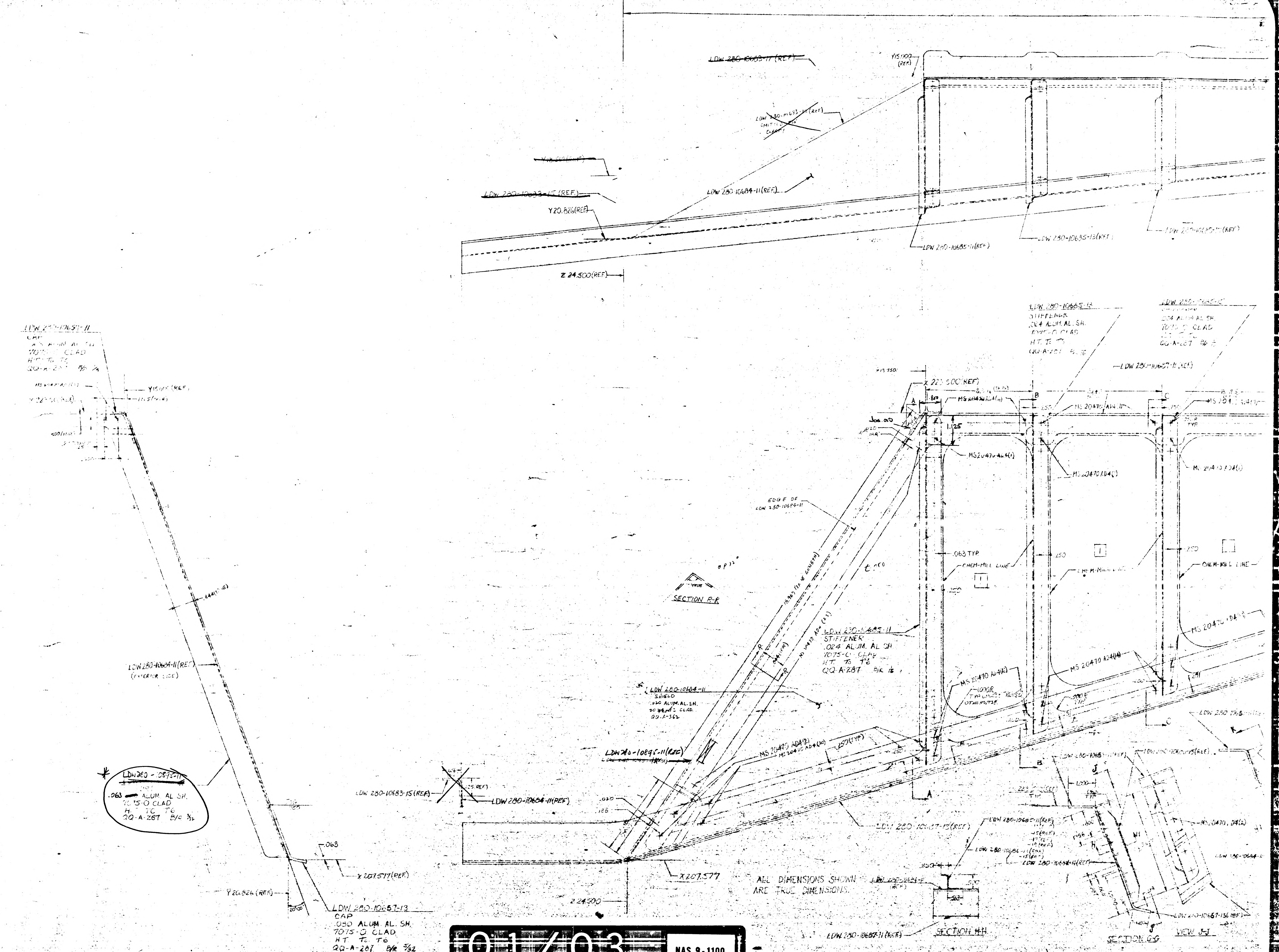
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
LM		NOTED		✓			✓		VDI			7-27-67	1/31/67		7/28/67	7-31-67

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	NOTED	LEO 280	667

ISSUED BY JOHN K. LEE SECTION VDI GROUP NO. 335 PL 25

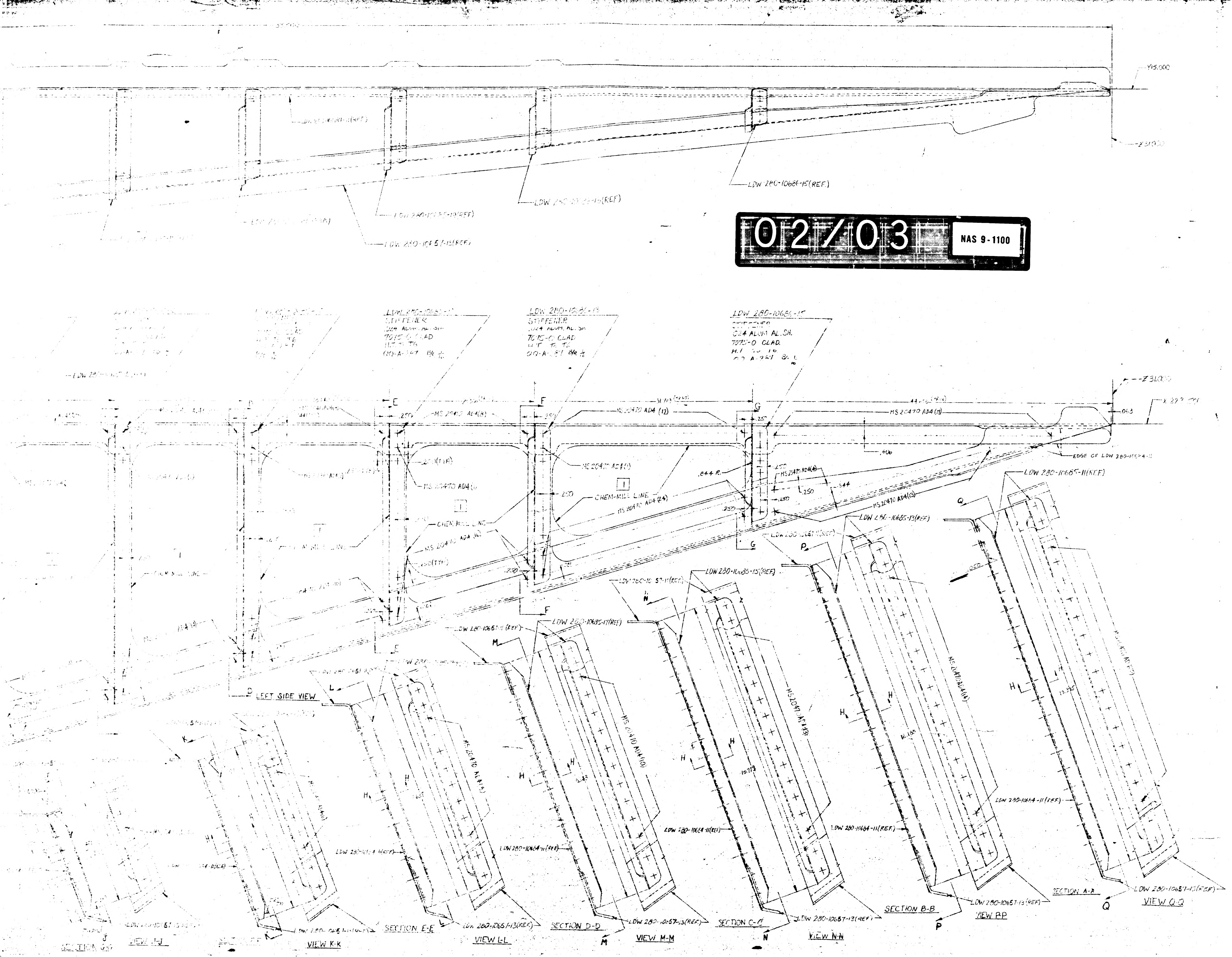
01

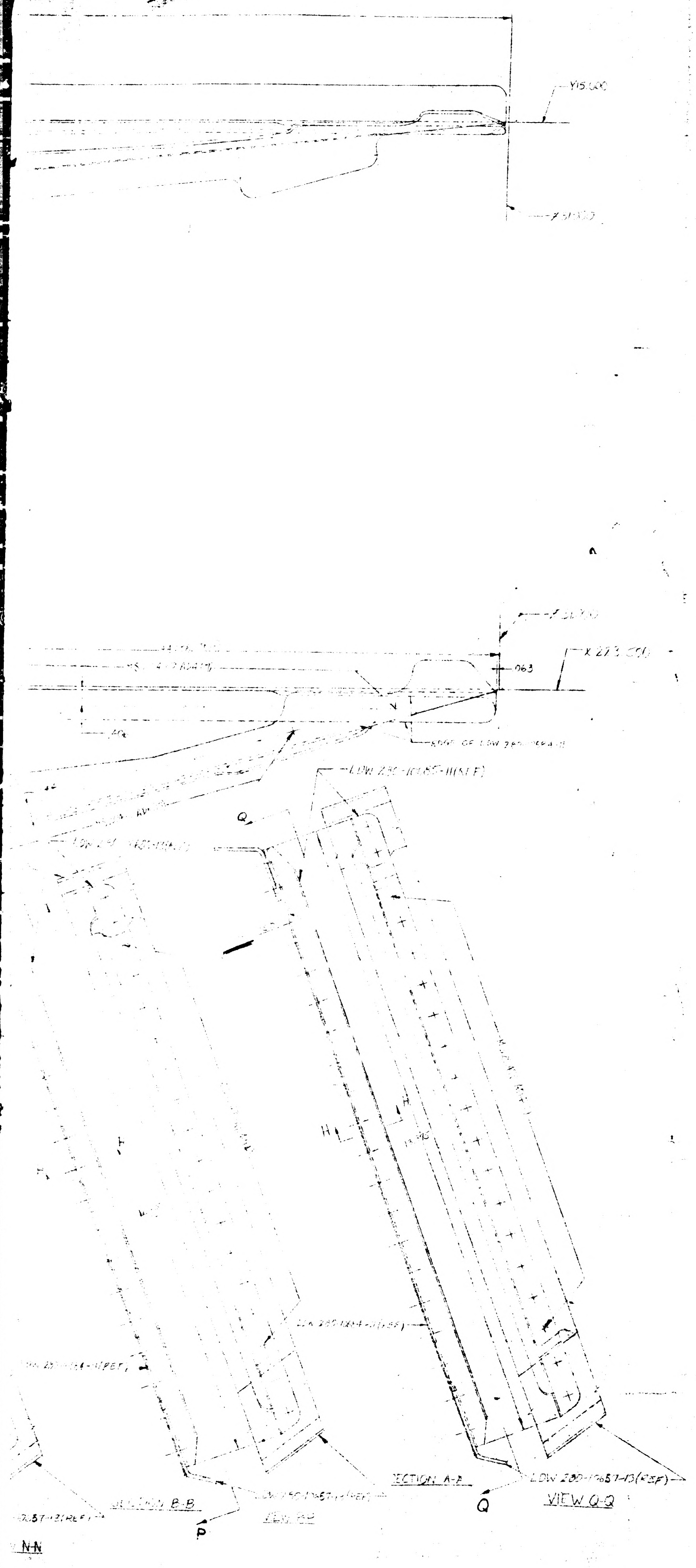
NAS 9-1100


LDW 280-10683-11 (REF)
Y15.000 (REF)
LDW 280-10683-15 (REF)
Y20.826 (REF)
LDW 280-10684-11 (REF)
Z 24.500 (REF)
LDW 280-10685-11 (REF)
LDW 280-10685-13 (REF)
LDW 280-10657-11
CAP
7075 CLAD
Y15.000 (REF)
LDW 280-10685-13
STIFFENER
.024 ALUM. AL. SH.
7075-O CLAD
H.T. TO T6
QQ-A-287
X 223.500 (REF)
MS 20470 AD4 (1)
.063 TYP
CHEM-MILL LINE
EDGE OF LDW 280-10684-11
SECTION R-R
LDW 280-10685-11
STIFFENER
.024 ALUM. AL. SH.
7075-O CLAD
H.T. TO T6
QQ-A-287 B/R 1/16
LDW 280-10684-11 (REF) (EXTERIOR SIDE)
LDW 280-10684-11
SHIELD
QQ-A-362
LDW 280-10895-11 (REF)
MS 20470 AD4 (2)
MS 20470 AD4 (14)
LDW 280-10683-15 (REF)
LDW 280-10684-11 (REF)
* LDW 280-10895-11
.063 ALUM. AL. SH.
7075-O CLAD
H.T. TO T6
QQ-A-287 B/R 3/32
.063
X 207.577 (REF)
Y 20.826 (REF)
LDW 280-10657-13
CAP
.050 ALUM. AL. SH.
7075-O CLAD
H.T. TO T6
QQ-A-287 B/R 5/32
X 207.577
Z 24.500
LDW 280-10657-13 (REF)
LDW 280-10657-11 (REF)
LDW 280-10657-15 (REF)
ALL DIMENSIONS SHOWN ARE TRUE DIMENSIONS.
SECTION H-H
SECTION G-G
VIEW J-J
A
B
C
R

01/03 **NAS 9-1100**

02/03 **NAS 9-1100**


Y15.000
Z31.000
LDW 280-10681-15(REF)
LDW 280-10683-13(REF)
LDW 280-10683-13(REF)
LDW 280-10657-13(REF)
LDW 280-10686-11
STIFFENER
.024 ALUM. AL. SH.
7075-O CLAD
H.T. TO T6
QQ-A-287 B/R ½
LDW 280-10686-13
STIFFENER
.024 ALUM. AL. SH.
7075-O CLAD
H.T. TO T6
QQ-A-287 B/R ½
LDW 280-10686-15
STIFFENER
.024 ALUM. AL. SH.
7075-O CLAD.
H.T. TO T6
QQ-A-287 B/R 1/10
Z31.000
X 223.500
.063
MS 20470 AD4 (8)
MS 20470 AD4 (12)
MS 20470 AD4 (11)
MS 20470 AD4 (1)
MS 20470 AD4 (4)
MS 20470 AD4 (10)
MS 20470 AD4 (24)
MS 20470 AD4 (13)
.250
.250 (TYP)
.844 R.
.344
.406
CHEM-MILL LINE
EDGE OF LDW 280-10684-11
LDW 280-10685-11(REF)
LDW 280-10685-13(REF)
LDW 280-10685-15(REF)
LDW 280-10657-11(REF)
LDW 280-10685-11(REF)
LDW 280-10684-11(REF)
LDW 280-10657-13(REF)
.050
E
F
G
H
K
L
M
N
P
Q
LEFT SIDE VIEW
SECTION G-G
VIEW J-J
VIEW K-K
SECTION E-E
VIEW L-L
SECTION D-D
VIEW M-M
SECTION C-C
VIEW N-N
SECTION B-B
VIEW P-P
SECTION A-A
VIEW Q-Q



NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	~~G.S.S.~~ LSP 14-1030	

RECORD E. O.'s		
MODEL	E O NUMBER	MODULE NO.

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
T6	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

MANUFACTURING OPERATIONS

NOTES CHECKED ✓ APPLY TO THIS DWG.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.	
REMOVE ALL BURRS. BREAK ALL EDGES .015 .031 EXCEPT AS NOTED.	✓
125 SURFACE ROUGHNESS INDICATED MARKED HOLES PER MIL-STD-10 EXCEPT AS NOTED.	
250 FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
RUBBER PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
INSPECTION INFORMATION MINIMUM PERMISSIBLE [illegible] MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓

REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY DLRF OR ECP	CLASS II	CLASS I / LIST SPEC ENG	ENGRG ORDER	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MODULE NUMBER	DISPOSITION OF EXIST PARTS: RE-WORK	SCRAP	ENGRG APP	GOVT APPD

NOTES:

*1. ALL INFORMATION NOT APPLICABLE TO LDW 280-10895 SHALL BE CONSIDERED REFERENCE INFORMATION

2a. ~~[illegible]~~

b. ~~[illegible] EXTERIOR SHALL BE [illegible] WITH [illegible]~~

c. ~~REMOVE [illegible] SURFACE [illegible]~~

d. ~~[illegible] RIVETS [illegible]~~

3. THIS DRAWING WILL BE REDRAWN ON A PRODUCTION FORMAT.

4. NO TOOLING HOLES PERMITTED IN PARTS

~~5. FINISH #88 SHALL BE APPLIED TO CHEM MILL SURFACE~~

6. DRAWING MAY BE SCALED FOR DIMENSIONS NOT SHOWN.

~~7. ALL PARTS I&T.~~

8. CORNER TRIM RADIUS ON FLAT PATTERN OPTIONAL. 1/4 R MAX

~~9. 2D EDGE DISTANCE FOR ALL RIVETS UNLESS NOTED OTHERWISE~~

10. BEND RADIUS FOR .063 THICK MATERIAL = 3/32

11. TOLLERANCE ON JOGGLES +.010 -.000

03/03 NAS 9-1100

~~LDW 280-10684-11~~

~~CHEM MILL LINE TOLERANCE ±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED) ±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040~~		
~~SYMBOL~~	~~THICKNESS AFTER CHEM-MILLING~~	~~DEPTH OF CUT~~
~~▢~~	~~.006 ±.002~~	~~.014 (REF)~~

QTY REQ'D PER ASSY				PART OR IDENTIFYING NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE
				~~[illegible]~~			~~STIFFENER~~								
				~~[illegible]~~			~~STIFFENER~~								
				~~[illegible]~~			~~STIFFENER~~								
				~~[illegible]~~			~~STIFFENER~~								
				~~[illegible]~~			~~STIFFENER~~								
				~~[illegible]~~			~~SHIELD~~								
	1			~~[illegible]~~ LDW10895-11	E		SUPPORT	AL ALY CLAD SHT	QQ-A-287	7075	.063	T6	88		
		1		~~[illegible]~~			~~PANEL ASSEMBLY~~								

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE	MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
LEM	LDW 280-22225	LEM-6 (36)	1				
LEM	↕	LEM-5 (35)	1				
LEM		LEM-4 (34)	1				
LEM		LEM-3 (33)	1				
LEM		LEM-2 (32)	1				
LEM		LEM-1 (31)	1				
LEM	LDW 280-22225	LTA-8 (18)	1				
PART NO. LDW 280-10895-11		GRUMMAN SCH INFO 30		PART NO.		GRUMMAN SCH INFO	

TO BE REDRAWN ON A PRODUCTION FORMAT.

3

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE UNLESS SPECIFIED FRACTIONS · DECIMALS · ANGLES ±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

GRUMMAN REL INFO

PREV NO. LE(001)

215 MP 7-19-62

DRAWN BY	I. KLEIN	
CHECKED BY		
LAYOUT BY		
GROUP LEADER		4/6
VEHICLE DESIGN		4/9
STRUCTURES		4/10
WEIGHTS		4/16
THERMODYNAMICS		4/9
PROJECT ENGR		4/9
RELEASE		7-21-62

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L.I., N.Y.

SUPPORT - ASC STAGE - M/S
ENGINE BAY SHIELD - LH - THERMAL

CONTRACT NO. NAS 9-1100 DOCUMENTATION TYPE

CODE IDENT NO.	SIZE	
26512	J	LDW 280-10895

SCALE FULL CONTRACT LINE ITEM #1 SHEET

THIS IS AN ORIG DWG

LDW 280-10895

DWG SIZE 34 X
PRINTING INFO ONLY
FULL SIZE SHEET AREA SQ. FT.
1/2 SIZE SHEET AREA (1/2 OF FULL) SQ. FT.
PRINT TRIM LINE

ENG 32.2 REV 3-65

*

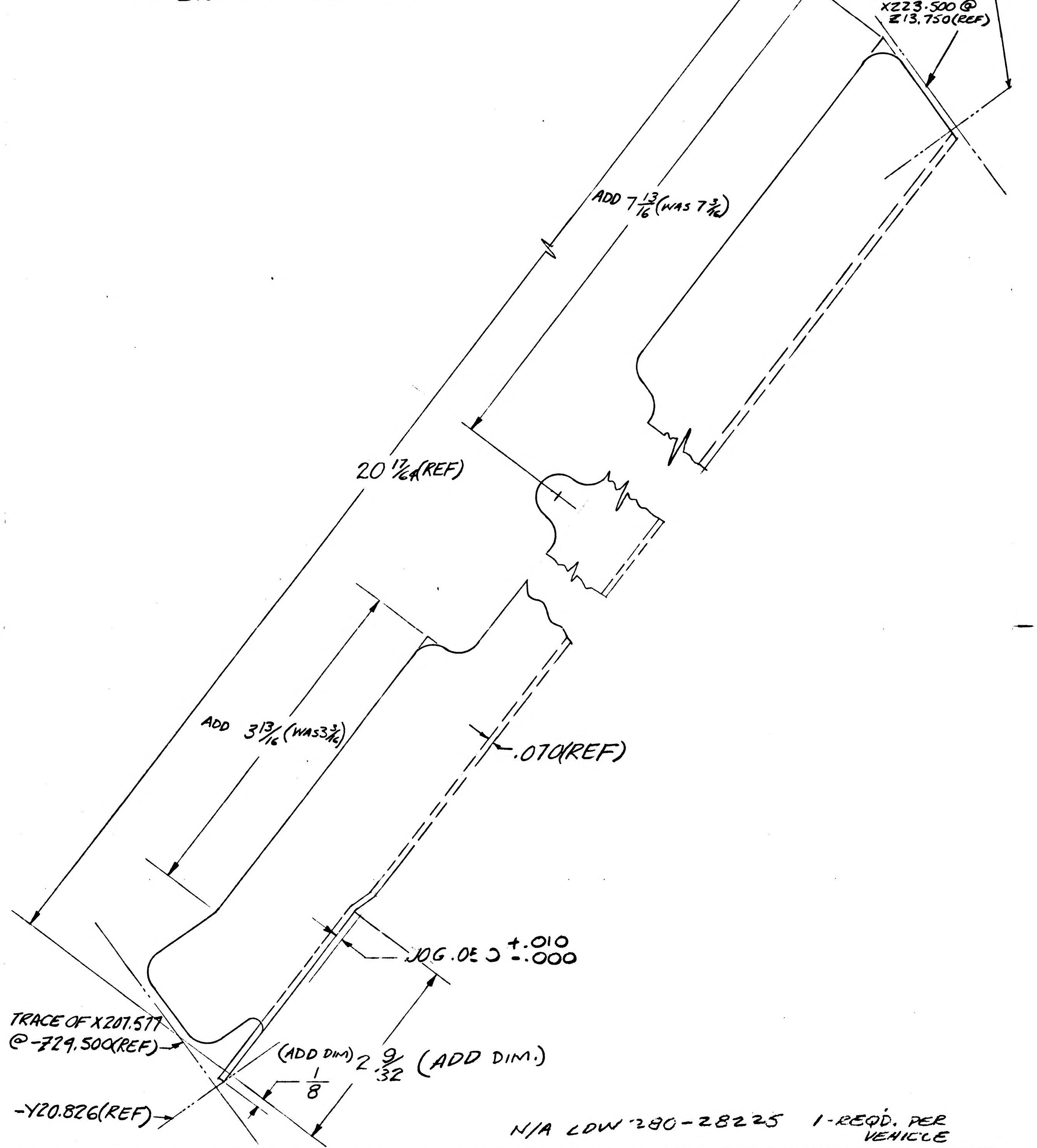
GRUMMAN AIRCRAFT ENGINEERING CORP.

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO.	LDW280-10895	EO NO.	A3
CONTROL INFO NO.	LDW 280A-2240		

IN F/D & B/M REMOVE -15, ADD -17 IDENTICAL
TO -15 EXCEPT AS SHOWN



-Y15.000(REF)
TRACE OF X223.500 @ Z13.750(REF)
ADD 7 13/16 (WAS 7 3/16)
20 17/64 (REF)
ADD 3 13/16 (WAS 3 3/16)
.070(REF)
JOG .050 +.010 -.000
TRACE OF X207.577 @ -Z29.500(REF)
(ADD DIM) 2 9/32 (ADD DIM.)
1/8
-Y20.826(REF)

N/A LDW 280-28225 1-REQD. PER VEHICLE

3

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG	

REASON FOR EO	DESCRIPTION OF EO	(R) GAEC C EO RELEASE
TO REMOVE INTERFERENCE	IN F/D & B/M REMOVE -15, ADDED -17	LE 10/19

MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY	JAP				HP PB		RMC (WR)	
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO	✓		-15		DATE	10/17	10/18/66		10/17	10/18		10-17-66	10/19/66
LM		LTA8(18)		REVISE DWG	RECORD EO	REWORK	SCRAP	17OCT.66	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~ASST~~
LM		LM1(31)		PRIORITY	DRAWING TITLE						DRAWING NO.				EO NO.	
LM		LM2(32)	(QUAL TEST)	C	SUPPORT-L.H.-A/S, M/S ENG BAY SHIELD THERMAL						LDW280-10895				A3	

ISSUED BY GMGreen / PAUL HENTON X7035 SECTION VEH. DES. INT. GROUP NO. 335 PL 35

01

NAS 9-1100

LDW280-10896 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28222	LEM-2(32)	1
LEM	LDW280-28222	LEM-1(31)	1
LEM	LDW280-28222	LTA-8(18)	1

PART NO. LDW280-10896-13

GAEC SCH NO. 30

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -13

GRUMMAN REL INFO A

PRIM NO.	CE(001)		
215	MP 7/28/6		RS 4-15

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ± .020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS-9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY	KORYKORA 4-9-66	THERMO	B FOR TK 4/17/66
LAYOUT BY	KORYKORA 4-9-66		
CHECKED BY			
GR. LEADER	P. HENTON 4-12-66		
VEH-DES INT	W. BISCHOFF 4-12-66		
STRUCTURES	A.P. F.E.B. 4-14-66	PROJ ENGR	J. ALBER 4-19-66
STRUCTURES	HILDERMAN 4-14-66	REL GROUP	BOTTI 4-21-66
WEIGHTS	MANDRAS 4-16-66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SHIELD
ASCENT STAGE- RIGHT HAND MID SECTION ENGINE COMPARTMENT

SIZE B

CODE IDENT NO. 26512

LDW280-10896 A

SCALE NONE

SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-10896 NO CHANGE 4-9-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE - LAST REV. NO CHANGE SH 1 OF 4 WAS SH 1 OF 1 LOFTED DWG WAS DIMENSIONED DWG A. MONTEMAGNO 7-14-66						
A	1	3.00						EO A1	ADDED IN F/D CHEM-MILL LINE, .50 R. REF, .652 DIM (WAS .64) & ADDED NOTE DIRECTLY UNDERNEATH .652 CALLOUT. ADDED IN F/D 3/4 DIA. HOLE, 1 3/8 DIM. REVISED CHEM MILL LINE, 1/2 R. (TYP), 6 17/32 DIM., TRACE ℄ FX 213.775 (REF) CALLOUT, ℄ + Z 13.491 CALLOUT	LTA-8 LEM-1 THRU LEM-6	✓		MONTEMAG NO 7-16-66		
	2	1.00, 2.00 & 3.00		A ADV				DCRF 323-1079 Ⓡ	IN FIELD, MODEL BLOCK & NOTES REMOVE -11, ADDED -13. IN MODEL BLOCK REMOVE LEM-3(33), LEM 4(34), LEM-5(35) & LEM-6(36) ADDED NOTE 3	LTA-8 LEM-1 LEM-2		-11			

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10896	A
SCALE NONE		SHEET 1.10	

ENG 77.3 5-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10896-13	E	SHIELD	SEE NOTE 2			.020X19 3/4X58	CM	76	6B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						CM	CHEM MILLING	LSP14-26100
						76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10896	A

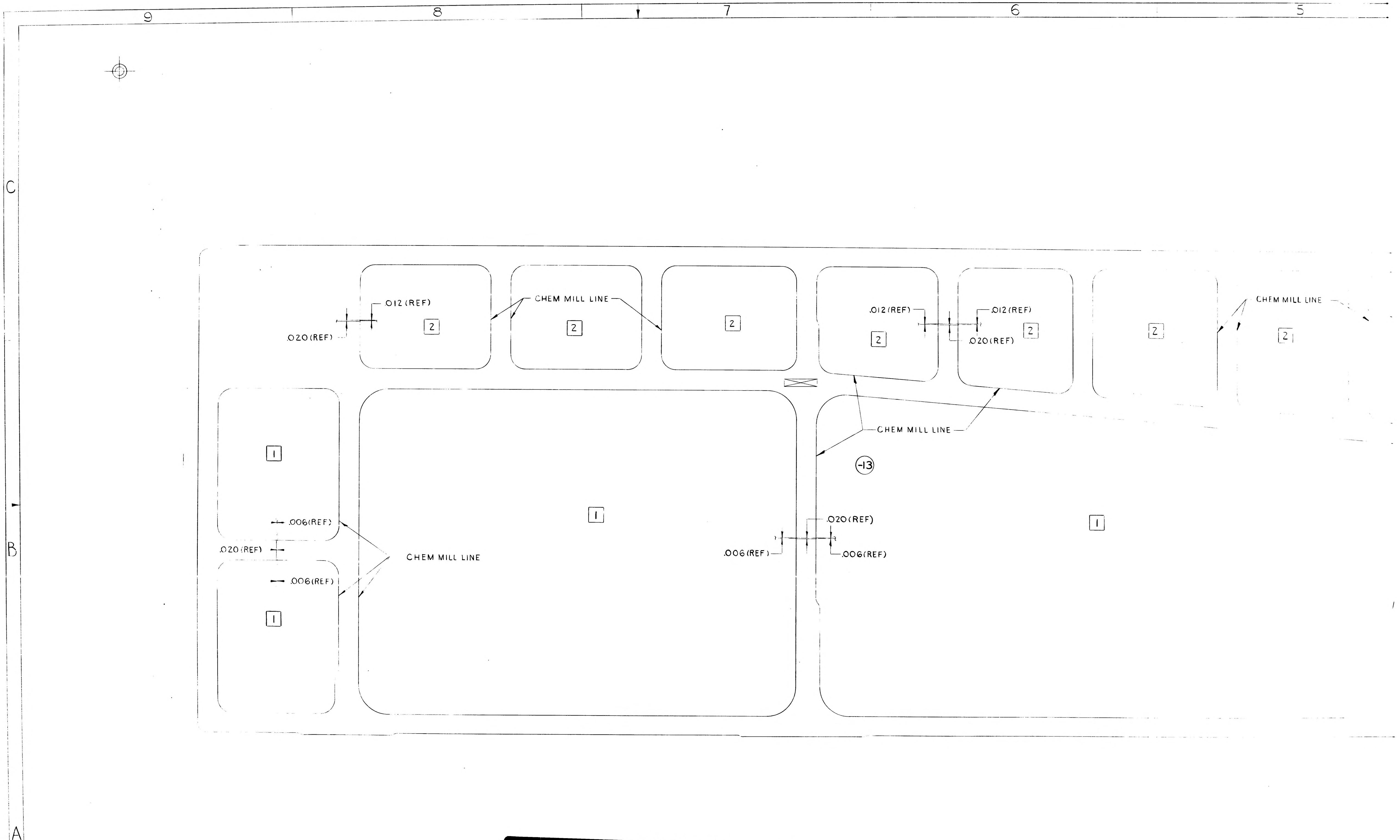
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


9
8
7
6
5
C
B
A
.012 (REF)
.020 (REF)
CHEM MILL LINE
CHEM MILL LINE
2
2
2
2
2
2
2
.012 (REF)
.012 (REF)
.020 (REF)
CHEM MILL LINE
-13
1
1
1
1
.006 (REF)
.020 (REF)
.006 (REF)
CHEM MILL LINE
.020 (REF)
.006 (REF)
.006 (REF)

01/02 NAS 9-1100

CODE IDENT NO. 26512
LDW280-10896
SH 3

NOTES:

1. NO TOOLING HOLES PERMITTED IN PART.
2a MAKE LDW280-10896-13 FROM 2024-T3 ALCLAD SH QQ-A-250/5 (SKIN QUALITY). FINISH ALUMALITE 200/R1/EB10 WHICH MAY BE PURCHASED FROM ALUMINUM CO. OF AMERICA (CODE IDENT * 01634).
b. THE SURFACE DESIGNATED EXTERIOR SHALL BE PROTECTED WITH STRIPPABLE VINYL COATING * 796 PURCHASED FROM CARROLL PRODUCTS INC. FARMINGDALE N.Y.
c. REMOVE FINISH ALUMALITE 200/R1/EB10 (ANODIZE) FROM INTERIOR SURFACE THEN TO BE CHEM-MILLED IN ACCORDANCE WITH LSP14-26100, FINISH ENTIRE SURFACE * 76 (LSP 14-9010).
3. WEIGHT OF CHEM-MILL SKIN AFTER FINAL TRIM (BUT BEFORE FASTENER HOLES ARE DRILLED SHALL NOT EXCEED .90 POUNDS.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▨ ~~USE BOTH SIDES IF NECESSARY.~~	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	√

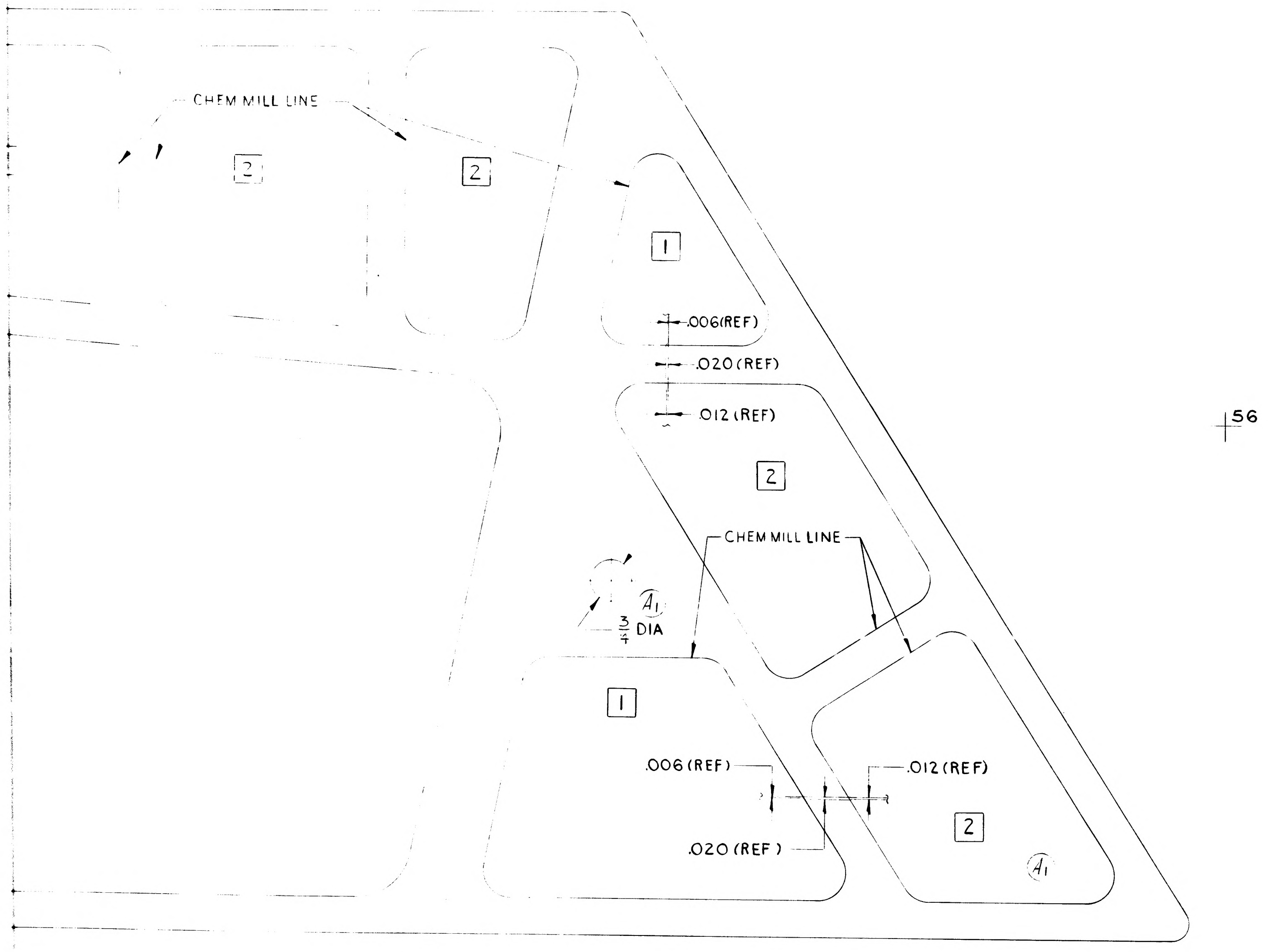
DWG SIZE 34 X 88

24 SQ. FT.
6 SQ. FT.

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 90) =
1/2 SIZE SHEET AREA (1/4 OF FULL) =

PRINT TRIM LINE

70
30



LDW 280-10896-13

CHEM-MILL LINE TOLERANCE:
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	.006 $^{+.003}_{-.001}$	.014 (REF)
2	.012 $^{+.003}_{-.001}$	.008 (REF)

C
B
A

LDW280-10896

02/02
NAS 9-1100

CODE IDENT NO. 26512
DW280-10896 SH 3

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE J	CODE IDENT NO. 26512	LDW280-10896	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

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*

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

ENG 32.1 REV 3-65

EO NO. LEO 280 | EO NO. 317
CONTROL INFO NO. LDW280A 0661

IN MOD. BLOCK : REVISE EFFECTIVITY

DRAWING NO	DASH NO.*	CHANGE NO.	EFFECTIVITY (WAS)	EFFECTIVITY (IS)	N/A	NUMBER REQD.
LDW280-28222	-5	C5	LTA8(18), LM1(31) & LM2(32)	LTA8(18) LM1 & LM2 & QUALIFICATION TEST	LDW280-28153 -28155 -28222	1
LDW280-10847	-21 -23 -25 -27	B1				
LDW280-10847	-29					
LDW280-10848	-11,-13,-15,-17,-23	B2				
LDW280-10849	-19 -21	C1				
LDW280-10849	-25 -27					
LDW280-10888	-23 -21	B2				
LDW280-10889	-29 -27 -21 -23 -25	B1				
LDW280-10896	-13	B1			-28222	1

3

DETAIL SPEC REQ ☐ | CL II ENGRG CHG ✓ | CL I ENGRG CHG ☐

REASON FOR EO: TO ADD QUAL. TEST TO EFF.

DESCRIPTION OF EO: FOR* ADDED QUALIFICATION TEST REQUIREMENTS.

GAEC EO RELEASE: K 10/19

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOTED	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: NOT REQD.

	APPROVED BY	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
DATE 9-23-66	9/23			9/23	9/23		10-10-66	10/14/66

PRIORITY: C

DRAWING TITLE: SEE DWG.

DRAWING NO.: LEO 280

EO NO.: 317

ISSUED BY GMGreen X7035 SECTION VEH. DES. INT. GROUP NO. 335 PL 35

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10896 | EO NO. B2
CONTROL INFO NO. LM-3-4555

ADD NOTE *

" WEIGHT REQUIREMENTS NEED NOT BE MET
FOR QUAL. TEST "

* NEXT AVAILABLE NO.

DETAIL SPEC REQ ☐ | CL II ENGRG CHG ☐ | CL I ENGRG CHG ☐

3

REASON FOR EO	WEIGHT NOT REQ'D FOR QUAL. TEST
DESCRIPTION OF EO	ADDED NOTE *
GAEC EO RELEASE	✓

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		QUAL. TEST (70)	

DRAWING CHANGE REQD	REVISE DWG ✓	RECORD EO
DISPOSITION OF PARTS	NOT REQD	

APPROVED BY						BM		PMC	
DATE	1/3			1-3	12-15-66	12-15-66	12-19-66		
3	VD1	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG		

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SHIELD A.S.-M.S.- ENG. COMPART.	LDW280-10896	B2

ISSUED BY LIAISON / VIC BOLLO x2151
SECTION VDI
GROUP NO. 335 PL 35

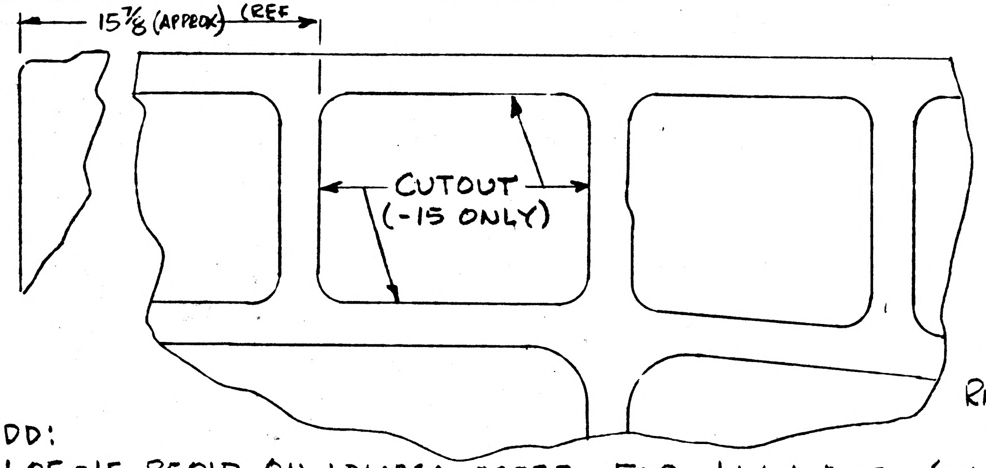
ENG 32.1 REV 3-65

FITH

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10896 | EO NO. B3
CONTROL INFO NO. LDW 280A-6568

CREATE -15 SAME AS -13 EXCEPT AS NOTED:



-13 MAY BE REWORKED TO MAKE -15

ADD:
1 OF -15 REQ'D ON LDW280-28222 FOR LM-1 & -2 (1 ST'E)
DELETE 1 OF -13 ON LDW280-28222 FOR LM-1 & -2

DETAIL SPEC REQ	☐	CL II ENGRG CHG	✓	CL I ENGRG CHG	☐	LCD19-1244

3

REASON FOR EO: INCREASED 'FITH' LOADS.

DESCRIPTION OF EO: ADDED -15, REVISED EFF. OF -13

GAEC EO RELEASE: J/C 4/26/7

MODEL	EFFECTIVITY PROCURING ACTIVITY NO.	EFFECTIVITY GAEC UNIT NO.	EFFECTIVITY SUB CONTR UNIT NO.
LM		LM-1 (31)	
LM		LM-2 (32)	

DRAWING CHANGE REQD REVISE DWG	DRAWING CHANGE REQD RECORD EO	DISPOSITION OF PARTS REWORK	DISPOSITION OF PARTS SCRAP
✓		✓	

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY				J.D.R.				
DATE	4/26/67			4/26/67	H.W.G.		4/26/67	4-27-67
#5	V.D.I							

PRIORITY: C
DRAWING TITLE: SHIELD-ASCENT STAGE R.H. MID. SECTION ENGINE COMPARTMENT
DRAWING NO.: LDW280-10896
EO NO.: B3

ISSUED BY VOLENTINE 4/25/67
SECTION VDI
GROUP NO. 335 PL 25

01

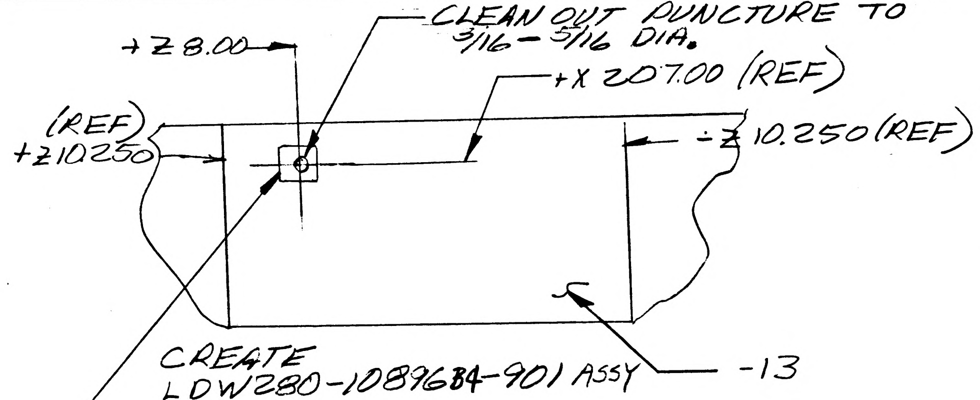
NAS 9-1100

TPS 304

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10896		EO NO. B4
CONTROL INFO NO. LM-83-2126		



CREATE
LDW280-10896B4-901 ASSY

LDW280-10896B4-911 1 1/2 X 1 1/2 1/4 R CORNER R.
MAT. QQ-A-250/4 2024-T3 FIN #76 PER LSP14-9010
.016 THICK. BOND IN PLACE USING EPON 934 PER
LSP 14-22500

RECORD EO

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	✓	LCD 10774

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
TO REPAIR PUNCTURE IN SKIN (REF S/C DR #431	ADDED EO TO RECORD BLOCK FOR LM-1	JK 11/7/67

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-1/31	

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
	✓	✓	

	PE	~~SUPPORT~~	~~RELIAB. GROUP~~ VDI	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY				W.D.		MAK		
DATE	BPA	11/1/67	10/25	10/27/67	10/24/67	250C X	10-25	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SKIN A/S THERMAL	LDW280-10896	B4

ISSUED BY LIAISON - J. KOSLOSKI X2313 SECTION V.D.I. GROUP NO. 812 PL 83

01 NAS 9-1100

LDW280-10898 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.
GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.
GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	LEM-6 36	1 EA
		LEM-5 35	
		LEM-4 34	
		LEM-3 33	
		LEM-2 32	
		LEM-1 31	
LEM	LDW280-28159	ITA-8 18	1 EA

PART NO. LDW280-10898-15 & -17
GAEC SCH NO. 30-

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED
LAST DASH NO. USED -13

GRUMMAN REL INFO
PRIM NO. 215
LE(001) MP12 A
R5X 4-26

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	E.ERICKSON-4-14-66	RELIABILITY	
LAYOUT BY	A.PFORTSCH 3-3-66		
CHECKED BY			
GR. LEADER	4/16		
VEH DES INT.	for W. BISCHOFF		
STRUCTURES	Feb 4/15	PROJ ENGR	5-9-66
STRUCTURES	HOLDERMAN 4/15	REL GROUP	Botts 5-11-66
WEIGHTS	5-7		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

WEBS
ASCENT STAGE-MID SECT-THERMAL SHIELDING BOTTOM L.H.

SIZE	CODE IDENT NO.		
B	26512	LDW280-10898	A

SCALE NONE
SHEET 1.00 OF 4

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1,1.10,2&3						®	REMOVED -11 & -13. ADDED -15 & -17	NOTED		-11 & -13	SCHELL 4/20/66		

FOR CONTINUATION OF REVISIONS SEE SHEET ____

ENG 77.3 5-66

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10898	A
SCALE NONE		SHEET 1.10	

01

NAS 9-1100

								LDW280-10898 -17	E	WEB	SEE NOTE 2	SEE NOTE 2	SEE NOTE 2	24 X 34	C.M.	76	
								LDW280-10898 -15	E	WEB	SEE NOTE 2	SEE NOTE 2	SEE NOTE 2	24 X 41	C.M	76	
QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						C.M	CHEM-MILLING	LSP14-26100

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10898	A

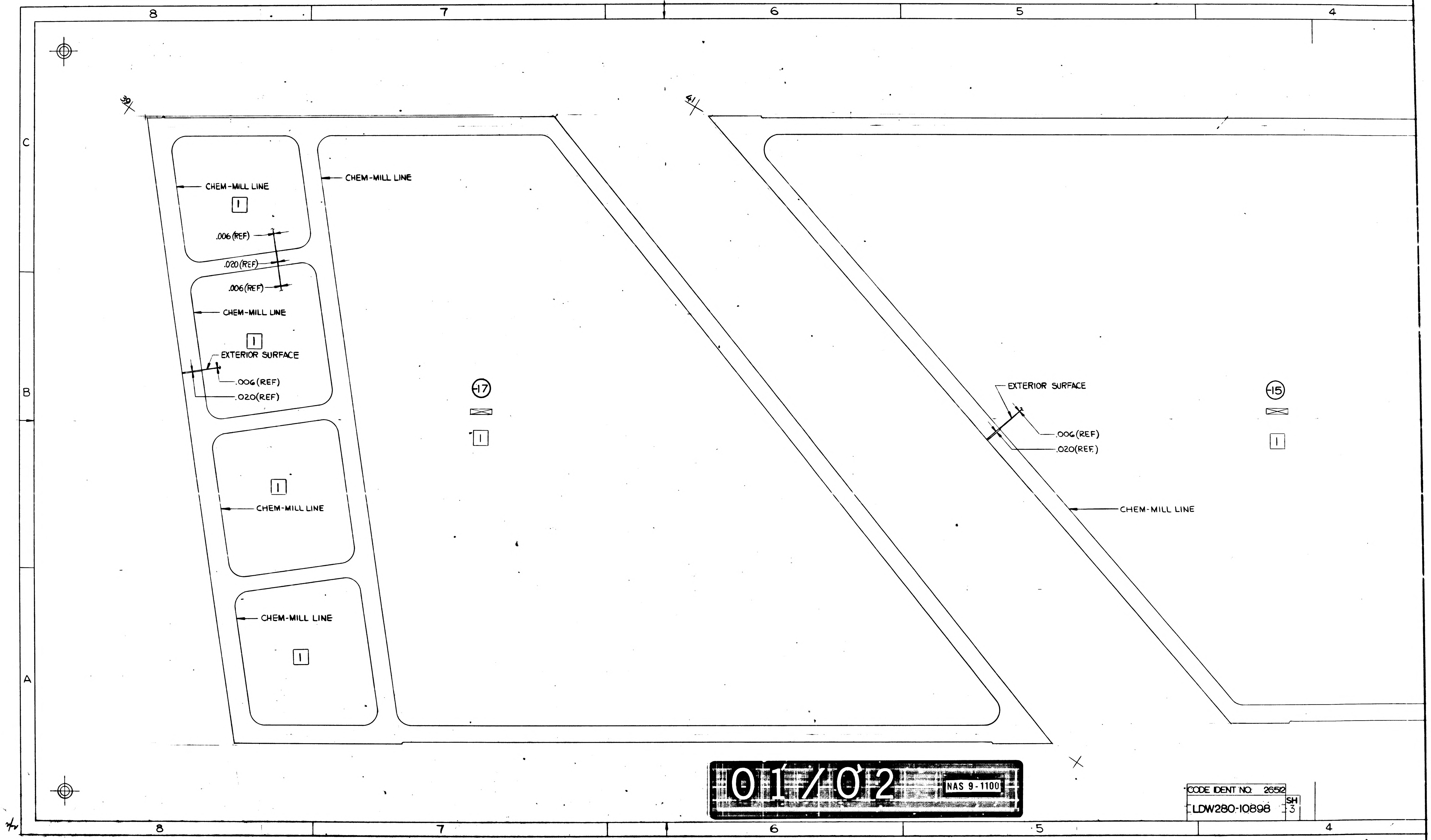
SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

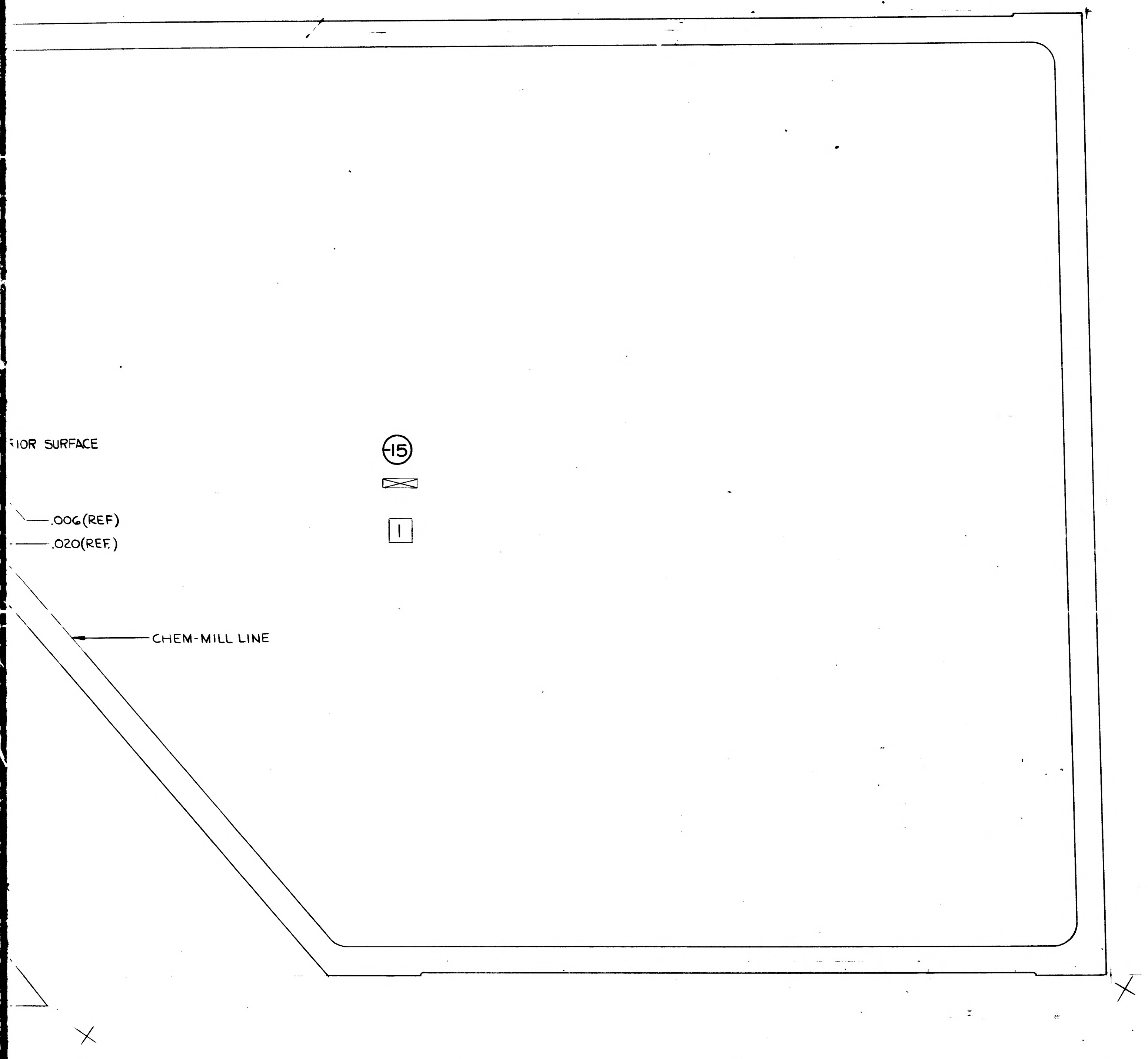
LDW280-10898 SH 3



8
7
6
5
4
C
B
A
39
41
CHEM-MILL LINE
1
.006 (REF)
.020 (REF)
.006 (REF)
CHEM-MILL LINE
1
EXTERIOR SURFACE
.006 (REF)
.020 (REF)
CHEM-MILL LINE
1
CHEM-MILL LINE
1
CHEM-MILL LINE
-17
1
EXTERIOR SURFACE
.006 (REF)
.020 (REF)
CHEM-MILL LINE
-15
1

01/02 NAS 9-1100

CODE IDENT NO. 26512
LDW280-10898 SH 3



60
25

NOTES:
1- NO TOOLING HOLES PERMITTED IN PARTS.
2- MAKE -11 & -13 FROM 2024-T3 ALCLAD BOTH SIDES (SKIN QUALITY). FINISH ALUMALITE 200/R1/EB10 WHICH MAY BE PURCHASED FROM ALUMINUM CO. OF AMERICA (CODE IDENT. .01634)
3- THE SURFACE DESIGNATED "EXTERIOR" SHALL BE PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROLL PRODUCTS INC. FARMINGDALE N.Y.
4.- REMOVE FINISH ALUMALITE 200/R1/EB10 (ANODIZE) FROM INTERIOR SURFACE & REFINISH AS NOTED
5- THE INTERIOR SURFACE TO BE CHEM-MILLED IN ACCORDANCE WITH LSP14 26.100 FINISH ENTIRE SURFACE #76 (LSP-14-9010)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 28 X 82

PRINTING INFO ONLY
FULL SIZE SHEET AREA (30 X 84) = 17.5 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 4.38 SQ. FT.

PRINT TRIM LINE

LDW280-10898-15 & -17

CHEM-MILL LINE TOLERANCE
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPT OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	.006 +.003 -.001	.014(REF)

02/02 NAS 9-1100

CODE IDENT NO. 26512
LDW280-10898 SH 3

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE H	CODE IDENT NO. 26512	LDW280-10898	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

LDW280-10898A

FOR PHOTO REPRODUCTION

K2

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO
EO NO.
CONTROL INFO NO.

DWG. NO.	DASH NO.*	TITLE	CHANGE NO	NEXT ASSEMBLY (SEE MODULE)	REQUIREMENTS	NUMBER REQD.
LDW280-106[illegible] ✓	-15	SEE DWG.	B1	LDW280-28159	ADD QUAL TEST TO EFF.	1
LDW280-10898 ✓	-15		B1			
	-17					
LDW280-10985	-15		B1			
	-17					
LDW280-10986	-15		B2			
	-17					
LDW280-10987	-11		B2			
	-13					
	-15					
	-17					
	-19					
LDW280-10989	-15		B1			
	-17					
LDW280-10990	-15		C1			
	-17					
	-23					
	-25					
LDW280-1[illegible]	-17		C3			
	-23					
	-25					
	-27					
	-29					
	-30					
LDW280-10992	-13		C2			
	-15					
	-17					
	-21					
LDW280-10993	-15		C1			
	-17					
	-19					
	-21					
	-23					
LDW280-10994	-16		B3			
	-17					
LDW280-10995	-17		B1			
LDW280-10996	-13		B1			
LDW280-10997	-11		B1			
LDW280-11000	-15 -17 -19 -21		B1			
LDW280-11001			B1			
	-13					1
LDW280-11002	-11		B1			5
	-13					5
	-15					5
LDW2[illegible]-11003	-17		B1			6
	-19					6
	-21					6
	-23					
LDW280-11007	-11		B1			1
	-13					
LDW280-11012	-11		C1			
	-15					
	-17					
	-19	SEE DWG.		LDW280-28159	ADD QUAL. TEST TO EFF.	

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG
REASON FOR EO
DESCRIPTION OF EO
GAEC EO RELEASE
MODEL | EFFECTIVITY: PROCURING ACTIVITY NO. | GAEC UNIT NO. | SUB CONTR UNIT NO.
DRAWING CHANGE REQD: REVISE DWG | RECORD EO
DISPOSITION OF PARTS: REWORK | SCRAP
APPROVED BY | DATE | SUPPORT | RELIAB GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG | GOVT
PRIORITY | DRAWING TITLE | DRAWING NO. | EO NO.

ISSUED BY ________ SECTION ________

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GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

EO NO. LE0280
EO NO. 327
CONTROL INFO NO. LDW280A0538

DWG. NO.	DASH NO.*	TITLE	CHANGE NO.	NEXT ASSEMBLY	REQUIREMENTS	NUMBER REQD.
LDW280-11194	-11	SEE DWG.	B2	LDW280-28159	ADD QUAL. TEST TO EFF.	1
LDW280-11331	-11		A1	LDW280-28378		
	-13			-28378		
LDW280-28378	-1		A1	LDW280-28159		1
LDW280M10604	-1		B4	-28159		2
	-2			-28162		2
LDW280M10605	-1		B2	-28159		1
LDW280M10606	-3-1		B3	-28159		
LDW280M10609	-5		B3	-28159		
LDW280M10610	-5		C4	-28159		
LDW280M10869	-3		B4	LDW280-28159		
	-4			-28159		
LDW280M10902	-1		A1	-28150		
LDW280M10905	-1		A2	-28159		
LDW280M10952	-3		B1	-28159		
LDW280M10955	-1		A1			
LDW280M10956	-1		A1			
LDW280M10969	-1		B2			
LDW280M10977	-1		A2	-28159		
LDW280M10940	-1		B2	-28153		
LDW280M10975	-1		A2	-28153 -51153		
LDW280-11004	-11		B1	-28159		4
	-13					4
	-15					4
LDW280-11006	-15		B1			1
	-13	SEE DWG.		LDW280-28159	ADD QUAL TEST TO EFF.	1
	-17					1
	-19					1
	-21					1
	-23					1

FOR THE PRECEEDING DRAWINGS: ADD QUALIFICATION TEST EFFECTIVITY FOR DASH NO'S * NOTED.

DETAIL SPEC REQ | CL II ENGRG CHG | ✓ CL I ENGRG CHG

REASON FOR EO: TO ADD QUALIFICATION TEST

DESCRIPTION OF EO: FOR -* ADDED QUALIFICATION TEST EFFECTIVITY

GAEC EO RELEASE: 16 10/2[illegible]

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOTED	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: NOT REQD
APPROVED BY — DATE: 10-10-66; 10/11; 10/11; 10/11; 10/12/66

PRIORITY: C
DRAWING TITLE: SEE DWG.
DRAWING NO.: LE0280
EO NO.: 327

ISSUED BY ________ SECTION VEH. DES. INT GROUP NO. 335 PL 35 EMA

Q-1

NAS 9-1100

LDW280-10899 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM	LSK280-11124	DVT (70)	8
	LDW280-52350	LM-2 (32)	8
	LDW280-51201	DVT (70)	8
		COMPNT. TEST	10
		LTA-3 (13)	10
		QUAL TEST (70)	8
	LDW280-51201	LM-1 (31)	10
	LDW280-51199	LTA-3 (13)	8
		QUAL. TEST (70)	8
		LEM-2 (32)	8
LEM	LDW280-51199	LEM-1 (31)	8
PART NO. LDW280-10899-11		GAEC SCH NO. 30-18	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO B		
		PRIM NO.	JK(001)	
LAST DASH NO. USED	-11	215	MP-1B-3/22/	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/64 NOTED ± 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100 LINE ITEM 1 DOCUMENTATION TYPE II

DRAWN BY	A.P. FORTSCH		
LAYOUT BY			
CHECKED BY			
GR. LEADER	P. HENTON 3/25/66		
VEH DES INT	W. BISCHOFF 3/25/66		
STRUCTURES	FEB JV 3/25/66	PROJ ENGR	J. ALBER RMC 3/28/66
STRUCTURES	HILDERMAN 3/25/66	REL GROUP	CARAMANICA 3/29/66
WEIGHTS	D. ROBESCH DJL 3/25/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

WASHER
ASCENT STAGE – MID SECTION RING
MOUNTING – THERMAL SHIELD LH & RH

SIZE	CODE IDENT NO.		
B	26512	LDW280-10899	B (B)

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-11899 'NO CHG' 3/29/66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	[illegible] APPD
											REWORK	SCRAP			
									RETRACED NO CHG LAST REVISION NO CHG. SH1OF4 WAS 1OF3.	JAEGGI	8-18-	66			
A	1	1.00,1.10					✓	LEO-130	ADDED LTA-3(13) REQMTS.	LTA-3	✓		JAEGGI 8-18-66	X	X
	2							LEO-132	ADDED LTA-3(13) REQMTS.						
	3							LEO-138	ADDED "COMPONENT TEST" REQMTS. EG	NOTED	NOT	REQD			
B	1	1.00					✓	LEO 280-353	ADDED LM-3(33) THRU LM-15(45) & QUAL.TEST(70) REQ'MTS. FOR -11	LM-3(33) THRU LM-15 (45) QUAL TEST(70)	NOT	REQD	N. TURAN 12-28-67	X	X
	2	1.00						LEO 280-415	FOR-11 ADDED 'QUAL.TEST' EFF.	QUAL TEST(70)	NOT	REQD			
	3	1.00					✓	LEO 280-445	FOR-11 REMOVED LM-3(33) THRU LM-6(36) EFF. & N/A LDW280-51201	LM-3 THRU LM-6		-11			
	4							E.O. B4	CANCELLED BY EO B5	LTA-8, LM-1, LM-2	✓				
	5							E.O. B5	CANCELLED E.O. B4	LM-1 THRU LM-6	✓				
	6	1.00					✓	LEO-280-740 LCD 2104	FOR-11 ADDED QUAL.TEST(70) REQUIREMENTS	QUAL.TEST(70)	NOT	REQD			
	7	1.00				✓		LEO 280-744 LCD -1894	IN MODEL BLOCK, ADDED DVT(70) EFF. QUANTITY (8) REQ'D	DVT(70)	NOT	REQD			
	8	1.00		A LFM-31		✓		E.O. B8 LCD 1894	IN M/B FOR-11 REMOVED N/A LDW280-51201, EFF. LM-2(32) REMOVED N/A LDW280-51179, EFF. LM-3(33) THRU LM-15(45) ADDED N/A LDW280-52350, EFF. LM-2(32). ADDED N/A LDW280-53981, EFF. LM-3(33). ADDED N/A LDW280-54981, EFF. LM-4(34) THRU LM-15(45). ADDED N/A LTM280-25563, EFF. PA-1(47).	LM-2(32) THRU LM-15(45) PA-1(47)	NOT	REQD	H.D.		
	9	1.00		LFM-31 A		✓		EO B9 LCD 1894	IN MOD BLK FOR -11 REMOVED N/A LDW280-53981 EFF LM-3(33) N/A LDW280-54981 EFF LM-4(34) THRU LM-15(45) N/A LTM280-25563 EFF PA-1(47)	LM-3(33) THRU LM-15(45) PA-1(47)		-11	R TAYLOR 5-20-68	X	X
	10	1.00				✓		LEO280-952 LCD 1894 ⑧	ON -11 ADDED DVT (70) REQUIREMENTS (REF EO A5 AGAINST LSK280-11124)	DVT (70)	NOT	REQD	L.D.		

FOR CONTINUATION OF REVISIONS SEE SHEET

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10899	B Ⓑ
SCALE NONE			SHEET 1.10

ENG 77.3 5-66

01

NAS 9-1100

LDW280-10901 A

PART NO. LDW280-10901-15 ¢-16

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28288	LEM-2 (32)	1 EA
LEM	LDW280-28288	LEM-1 (31)	1 EA
LEM	LDW280-28288	LTA 8(18)	1 EA
		GAEC SCH NO. 32-5	

PART NO. LDW280-10901-11 ¢-13

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28288	LEM-2 (32)	2 EA
LEM	LDW280-28288	LEM-1 (31)	2 EA
LEM	LDW280-28288	LTA-8 (18)	2 EA
		GAEC SCH NO. 32-5	

PART NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
		GAEC SCH NO.	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		1.10		2.00		3.00	
REV	A		A		A		A	
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED

LAST DASH NO. USED -16

GRUMMAN REL^c INFO A

PRIM NO. 215 | LE(001) MP12A | JR 5-24

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ± .020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM #1

DOCUMENTATION TYPE II

DRAWN BY	R. COPPOLA 5/17	RELIABILITY	
LAYOUT BY	J. CARROL		
CHECKED BY	APATOU 5-18-66		
GROUP LDR	5/15/66		
VEH.DES.INT.			
STRUCTURES	5/23	PROJ ENGR	5-27
STRUCTURES	5/23	REL GROUP	6-2-66
WEIGHTS	5-26		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DOUBLER — ASCENT, MID-SECTION,
- Z 27 BULKHEAD X238.50

SIZE	CODE IDENT NO.		
B	26512	LDW280-10901	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~[illegible]~~ APPD
											REWORK	SCRAP			
A	1	1.00, 1.10 2.00, 3.00						EO A1	EO A1 INITIAL DRAWING RELEASE. PARTS MADE PER EO. ®	LEM-1 & -2 LTA-8	NOT	REQD Z.A.	LOEW 5-12-66		

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-66

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280 — 10901	A
SCALE NONE			SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10901-16	E	STIFFENER	AL ALLOY SH	QQ-A-250/4	2024-T3	.040×1½×8	NONE	88	6A
								-15	↕	STIFFENER	↕	QQ-A-250/4	2024-T3	.040×1½×8	NONE	↕	6A
								-13	↕	DOUBLER	↕	QQ-A-250/12	7075-T6	.032×2½×2½	NONE	↕	3A
								LDW280-10901-11	E	DOUBLER	AL ALLOY SH	QQ-A-250/12	7075-T6	.032×5×8-5/8	NONE	88	6C

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280 - 10901	A
SCALE NONE			SHEET 2.00

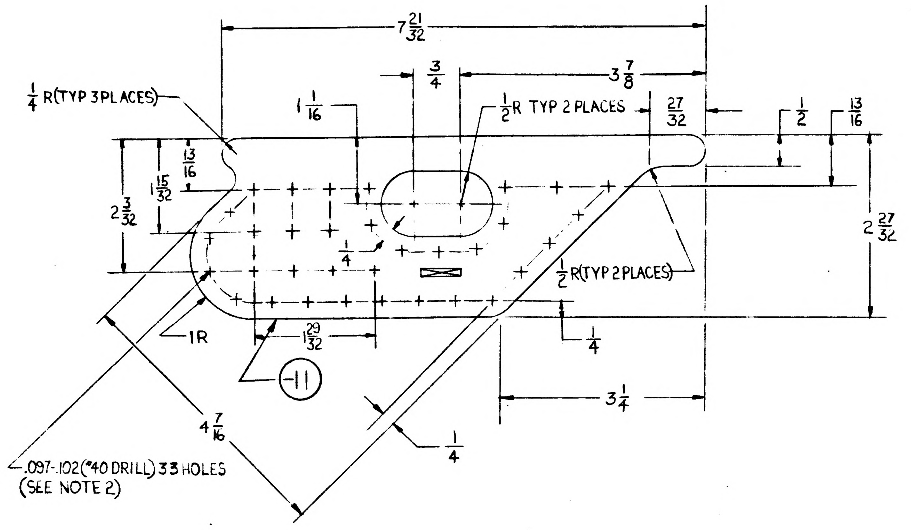
ENG 77.2 7-65

01

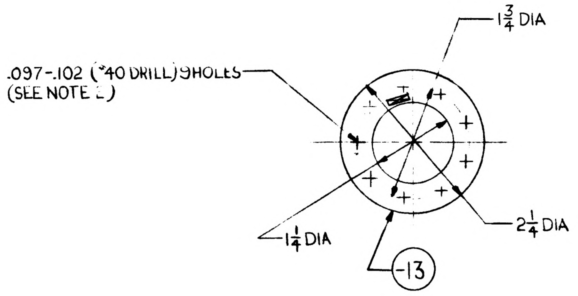
NAS 9-1100

LDW280-10901 A

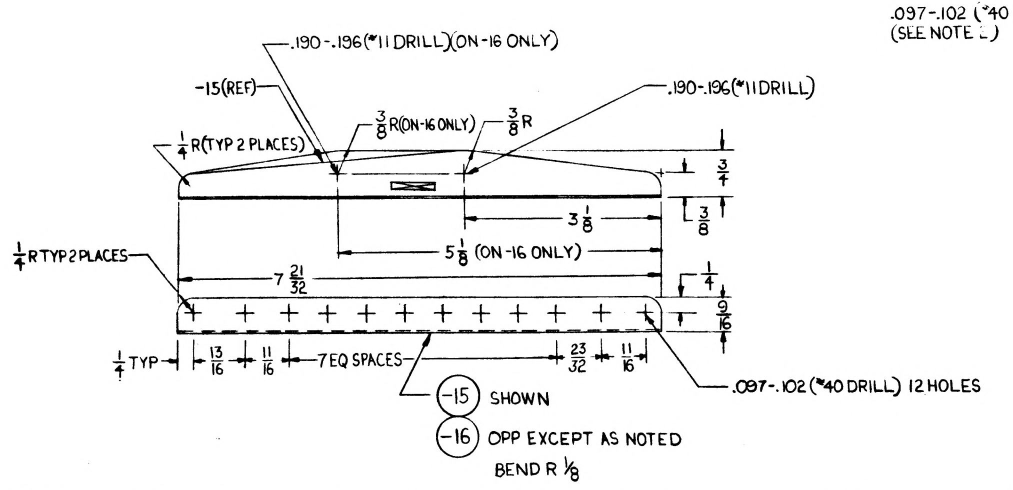
NOTES
1. NO TOOLING HOLES PERMITTED IN PARTS
2. ALL DRILLED HOLES EQUALLY SPACED BETWEEN LOCATED HOLES



$7\frac{21}{32}$
$\frac{3}{4}$
$3\frac{7}{8}$
$\frac{1}{4}$ R(TYP 3 PLACES)
$1\frac{1}{16}$
$\frac{1}{2}$R TYP 2 PLACES
$\frac{27}{32}$
$\frac{1}{2}$
$\frac{13}{16}$
$2\frac{3}{32}$
$1\frac{15}{32}$
$\frac{13}{16}$
$2\frac{27}{32}$
$\frac{1}{4}$
$\frac{1}{2}$R(TYP 2 PLACES)
1R
$1\frac{29}{32}$
$\frac{1}{4}$
-11
$3\frac{1}{4}$
$4\frac{7}{16}$
$\frac{1}{4}$
.097-.102(#40 DRILL) 33 HOLES
(SEE NOTE 2)



$1\frac{3}{4}$ DIA
.097-.102 (#40 DRILL) 9 HOLES
(SEE NOTE 2)
$2\frac{1}{4}$ DIA
$1\frac{1}{4}$ DIA
-13



.190-.196(#11 DRILL)(ON-16 ONLY)
-15(REF)
.190-.196(#11 DRILL)
$\frac{1}{4}$ R(TYP 2 PLACES)
$\frac{3}{8}$R(ON-16 ONLY)
$\frac{3}{8}$R
$\frac{3}{4}$
$3\frac{1}{8}$
$\frac{3}{8}$
$5\frac{1}{8}$ (ON-16 ONLY)
$\frac{1}{4}$R TYP 2 PLACES
$7\frac{21}{32}$
$\frac{1}{4}$
$\frac{9}{16}$
$\frac{1}{4}$ TYP
$\frac{13}{16}$
$\frac{11}{16}$
7 EQ SPACES
$\frac{23}{32}$
$\frac{11}{16}$
.097-.102 (#40 DRILL) 12 HOLES
-15 SHOWN
-16 OPP EXCEPT AS NOTED
BEND R $\frac{1}{8}$

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ [redacted]	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-10901	A
	SCALE FULL		SHEET 3.00	

LDW280-10901 A

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10901
EO NO. B1
CONTROL INFO NO. LDW280-9130

TO LDW280-10901-13
ADD EFFECTIVITY
LEM-3 (33) N/A LDW280-53333
2 REQ'D

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: PROVIDE CLEARANCE HOLE SUPPORT

DESCRIPTION OF EO: TO -13 ADD EFFECTIVITY LEM-3(33) N/A LDW280-53333

GAEC EO RELEASE: VE 8-6-6 C

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-3(33)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: NOT REQ'D. REWORK SCRAP

	VDI	~~SUPPORT~~ WTS	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY	WT	Lgy		~			RWC(W)	
DATE	8/1/66	8/10/66		~			8-13	8-4-66

PRIORITY: C
DRAWING TITLE: DOUBLER ASCENT MID-SECT -227 BKHD X238.5
DRAWING NO. LDW280-10901
EO NO. B1

ISSUED BY K. BEACH 6455 SECTION VD1 GROUP NO. 335 PL 5 WT

01

NAS 9-1100

01
NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 1315
CONTROL INFO NO. LDW280B6820

TO THE FOLLOWING DRAWINGS LISTED BELOW & THEIR *DASH NUMBERS RESTRICT TO LM4(34) THRU LM14(44) WAS LM 4(34) THRU LM15(45)

DWG #	TITLE	*DASH #	QUANTITY	N/A	EO#
LDW280-10901	DOUBLER A/S-M/S -227 EQUIP LINES	-13	2	LDW280-54333	B3
LDW280-11196	BRACKET A/S-M/S -227 EQUIP LINES	-1 -5 & -17	2 1EA		C1
LDW280-11378	BRACKET A/S-M/S -227 EQUIP LINES	-11,-13,-16, -17, & -19 -15	1EA 2		B1
LDW280-11379	BRACKET A/S-M/S -227 EQUIP LINES	-11,-13,-15, -17 & -18	1EA		B1
LDW280-11380	CLIP A/S-M/S -227 EQUIP LINES	-11,-13,-15 -17 & -19	1EA		B1
LDW280-11402	BRACKET A/S-M/S -227 EQUIP LINES	-11,-17,-19 & -1 -13	1EA 2		B3
LDW280-11403	BRACKET A/S-M/S -227 EQUIP LINES	-1,-2, & -17	1EA		A3
LDW280-11674	BRACKET A/S-M/S -227 EQUIP LINES	-11,-23,-15 -27 & -29	1EA		D1
LDW280-16087	BRACKET ASSY, A/S-M/S -227 EQUIP LINES	-1	2		A2
LDW280-16024	CLIP A/S-M/S -227 EQUIP LINES	-11	1	LDW280-54333	C3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD 3587 PKG # 11 (5)

REASON FOR EO: ELIMINATION OF CERTAIN EQUIP IN THE LM15 A/S

DESCRIPTION OF EO: IN MOD BLK FOR * RESTRICTED TO LM4(34) THRU LM14(44) WAS LM 4(34) THRU LM15(45)

EO RELEASE: VC 3/26/69

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK SCRAP ✓

		SUPPORT	~~RELIAB GROUP~~ MAT'LS	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
APPROVED BY								
DATE	3/6/69			3/6/69	3/11/69		3/20/69	3-26-69
	VDI							

PRIORITY: C
DRAWING TITLE: SEE ABOVE
DRAWING NO.: LEO 280
EO NO.: 1315

4-15-69
ISSUED BY P. WEISSLITZ x86048 SECTION VDI GROUP NO. 335 PL 25

LDW280-10902 A

PART NO. LDW280-10902-21

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-52020	LEM-2(32)	1
LEM	LDW280-51020	LEM-1(31)	1
LEM	LDW280-28020	LTA-8(18)	1

PART NO. LDW280-10902-17 — GAEC SCH NO. 32-4, 32-5

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28318	LEM-2(32)	1
LEM	LDW280-28318	LEM-1(31)	1
LEM	LDW280-28318	LTA-8(18)	1
LEM	LDW280-52020	LEM-2(32)	3
LEM	LDW280-51020	LEM-1(31)	3
LEM	LDW280-28020	LTA-8(18)	3

PART NO. LDW280-10902-13,-15,-19 — GAEC SCH NO. 32-5

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28318	LEM-2(32)	1
LEM	LDW280-28318	LEM-1(31)	1
LEM	LDW280-28318	LTA-8(18)	1

PART NO. LDW280-10902-11 — GAEC SCH NO. 32-5

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28318	LEM-2(32)	6
LEM	LDW280-28318	LEM-1(31)	6
LEM	LDW280-28318	LTA-8(18)	6

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-21

GRUMMAN RELINFO

PRIM NO.	VE(001)	
215	MP-8	8-24-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/64 ±.010 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	E.LECUN 8/5/66	RELIABILITY	
LAYOUT BY	HARRIGAN		
CHECKED BY	J Kartzman 8-11-66		
GROUP LDR	8/18/66		
VEH DES INT	WR BISCHOFF		
STRUCTURES	BW 8-25	PROJ ENGR	RM Carbee 8-23
STRUCTURES		REL GROUP	Bolt. 9-6-66
WEIGHTS			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DOUBLER
ASCENT - MID SECT.

SIZE B | CODE IDENT NO. 26512 | LDW280-10902 | A
SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1,1.10,2,3						E O A1	INITIAL RELEASE, PARTS MADE PER EO	LTA-8 LEM-1,-2	NOT	REQD	LeCUN 8/5/66		9.6.66
	2	1,1.10,2,3						E O A2	FOR -17 ADDED NEXT ASSY'S LDW280-28020, LDW280-51020, LDW280-52020 ON LTA-8, LEM-1 & LEM-2. ADDED -21						

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS
A					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10902	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10902-21	E	DOUBLER	AL ALLOY SH	QQ-A-250/4	2024-T3	.063 x 1¾ x 1¾	NONE	88	
								-19						.063 x 2⅝ x 2⅝			
								-17						.063 x 2½ x 2½			
								-15						.063 x 2¼ x 2¼			
								-13						.063 x 2⅞ x 2⅞			
								LDW280-10902-11	E	DOUBLER	AL ALLOY SH	QQ-A-250/4	2024-T3	.063 x 3⅛ x 3⅛	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10902	A

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

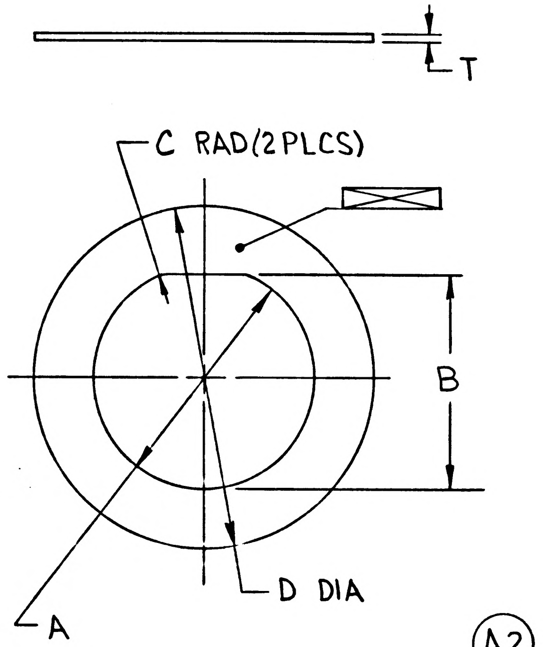
01

NAS 9-1100

TABULATION					
DASH NO.	A	B	C	D	T
-11	1.903 1.878	1.823 1.818	.015 .010	$2\frac{7}{8}$	.063
-13	1.644 1.634	1.575 1.565	.015 .010	$2\frac{5}{8}$	.063
-15	1.017 1.007	.955 .945	.015 .010	2	.063
-17	1.269 1.259	1.208 1.198	.015 .010	$2\frac{1}{4}$	.063
-19	1.144 1.134	1.084 1.074	.015 .010	$2\frac{1}{8}$	.063
-21	.510 .505	.476 .470	.015 .005	$1\frac{1}{2}$	.063

NOTE:
1. HAND SELECT MATERIAL - ONE SIDE TO BE FREE OF ALL SCRATCHES.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY. ✓



LDW280-10902-11,-13,-15,-17,-19,-21

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10902	A
SCALE NONE		SHEET 3.00	

ENG 72.1 8-64

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10903-21	E	SUPPORT	AL.ALLOY SH	QQ-A-250/4	2024-T3	.040X 6 X7 1/8	NONE	88	
		LDW280-10903-15	E	ANGLE	AL.ALLOY SH.	QQ-A-250/4	2024-T3	.040×1 3/4×2 3/4	NONE	88	
		LDW280-10903-19	E	SUPPORT	AL ALLOY SH.	QQ-A-250/4	2024-T3	.040×5 5/8×7 1/8	NONE	88	
		LDW280-10903-17	E	SUPPORT	AL.ALLOY SH.	QQ-A-250/4	2024-T3	.032×3 1/8×5 1/8	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10903	B

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

LDW280-10903 D

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23031	LEM-15(45)	1 EA
		LEM-14(44)	1 EA
		LEM-13(43)	1 EA
		LEM-12(42)	1 EA
		LEM-11(41)	1 EA
		LEM-10(40)	1 EA
		LEM-9(39)	1 EA
		LEM-8(38)	1 EA
		LEM-7(37)	1 EA
		LEM-6(36)	1 EA
		LEM-5(35)	1 EA
		LEM-4(34)	1 EA
		LEM-3(33)	1 EA
LEM	LDW280-23031	LTA-3(13)	1 EA
PART NO. LDW280-10903-15, -17 & -21		GAEC SCH NO. 31-2	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28031	LEM-2(32)	1
LEM	LDW280-28031	LEM-1(31)	1
LEM	LDW280-28031	LTA-8(18)	1
PART NO. LDW280-10903-19		GAEC SCH NO. 31-2	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00
REV	D	D	B		D
SHEET		1.11			
REV		D			
SHEET					
REV					

LAST SECT LTR USED A

LAST DASH NO. USED -21

GRUMMAN REL INFO D

PRIM NO. 215 K001

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.010 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY L. DIXON 4-22-66
LAYOUT BY R DI MARCO
CHECKED BY EG 4-28-66
GR LEADER W. Traut 4/28/66
VEH DES INT W E BISCHOFF 4/28
STRUCTURE BW 5/2
STRUCTURE 5/3
WEIGHTS
RELIABILITY
PROJ ENGR 5-4-66
REL GROUP 5-11-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT
ASCENT STAGE CABIN-IMU BEAM WIRING
+Z 62.218

SIZE B
CODE IDENT NO. 26512
LDW280-10903 D
SCALE NONE
SHEET 1.00 OF 5

ENG 77.1 12-65

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	~~SH CHG LTR~~	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
												REWORK	SCRAP			
A	1	1, 1.10, 2 & 3							EOA1	EOA1 INITIAL DRAWING RELEASE. PARTS MADE PER EO	LTA-8 LEM-1 & -2	NOT	REQD	L. Dixon 4-25-66	WT 4/?/66	[illegible] 5-9
	2									REMOVED -11 & -13, ADDED -17 & -19 Ⓡ	LTA-8 LEM-1 & -2		-11 & -13	EG		
B	1	1.110.3							EO B1	SUPERSEDED BY EO B2	NOT REQD	NOT	REQD	T.FREDA 6-29-66		
	2								EO B2	SUPERSEDES EO B1, IN FLD (ON-17 & -19) ADDED (1) & (2) DRILL #19 HOLES RESP. & LOC DIMS.	LTA-8, LEM-1-2	✓	ww			
	3	1.00, 1.10, 2.00 & 3.00							EO B3	IN FLD. & B/M ADDED -21 IN MOD/BLK ADDED FOR -15, -17 & -21 LTA-3, LEM-3 THRU 6 N/ALDW 280-23031 Ⓡ	LTA-3 LEM-3 THRU 6	NOT	REQD	P. Lamo 6-?-66		
C	1	1.10							EO-C1	NOT APPLICABLE PREVIOUSLY INC. BY EO-B2	NOT REQD	NOT	REQD	JESAITIS, T 8-20-66	WT 8/24/66	
	2	1.10							EO-C2	NOT APPLICABLE NO-13	NOT REQD	NOT	REQD			
	3	1.10 & 3							EO-C3	ON-11 ADDED .165-.171 E19 1 HOLE. ON-21 ADDED .165-.171 E19 3 HOLES. ADDED E19 KEY TO KEY OF DWG	LEM-3, 4, 5 & 6	✓				
	4	1.10								REF EO-C3- E19 HOLE IN-11 NOT APPLICABLE NO-11. ON-21 ADDED 1 E19 HOLE (3 5/8 x 1 LOCATION) OTHER HOLE ADDED BY EO-B2. NO KEY REQD. FOR DETAIL PARTS		NOT	REQD	WW	[illegible] 9-17-66	[illegible] 10-5-66
	5	1.00, 1.10								IN MOD. BLK, FOR -15, -17 & -21, ADDED EFF. LEM-7 (37) THRU LEM-15 (45). Ⓡ HR	LEM-7 THRU LEM-15			JAEGGI 9/8/66		
D	1	1.10, 1.00								INC. EO D1	LTA-8 (18) LM-1 LM-2			R. TAYLOR 3-24-69		
	2	1.10								INC. EO D2	LTA-3 (13) LM-3 THRU LM-6		H.D.			

FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10903	D
SCALE NONE			SHEET 1.10

ENG 77.3 5-64

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
D	3	1.11 1.00							INC. EO D3. ADDED SH 1.11	LTA-3(13) LTA-8(18) LM-1(31) THRU LM-6(36)			R TAYLOR 3-24-69		
	4	1.11							INC. EO D4.	LTA-8(18) LTA-3(13) LM-1(31) THRU LM-6(36)					
	5	3.00							INC. EO D5.	LM-2 LM-3					
	6	1.11						Ⓟ	INC. EO D6.	LTA-3(13) LM-3(33) THRU LM-15(45)		H.D.			

CHG APPD LTR	GROUP LTR	STRUCT	STRUCT	WEIGHTS							
D											

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10903	D
SCALE NONE			SHEET 1.11

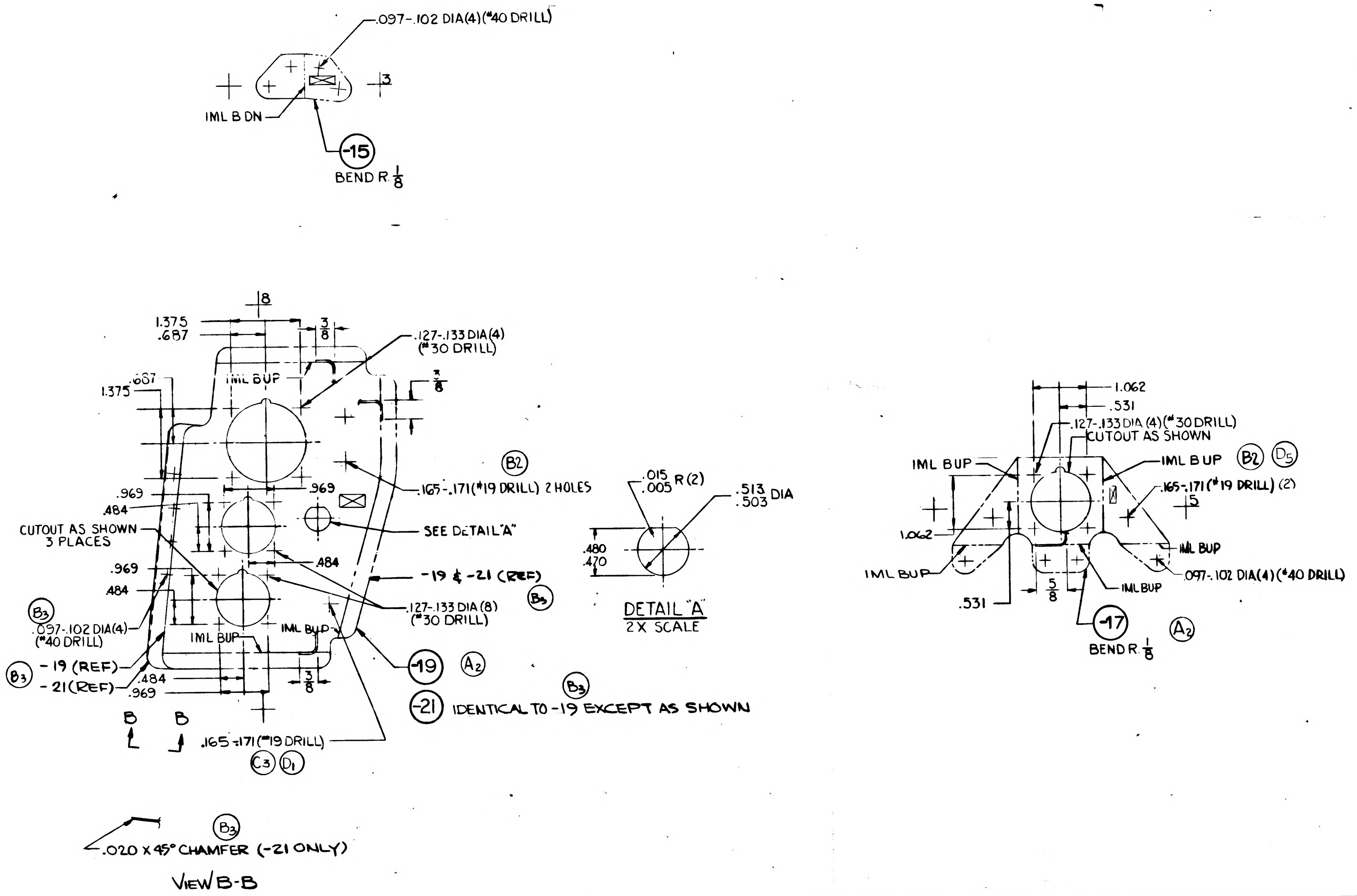
Ⓓ

ENG 77.3 5-65

01

NAS 9-1100

NOTES
1. NO TOOLING HOLES PERMITTED IN PARTS


.097-.102 DIA(4)(#40 DRILL)
3
IML B DN
-15
BEND R 1/8
18
1.375
.687
3/8
.127-.133 DIA(4)
(#30 DRILL)
IML BUP
1.375
.687
3/8
B2
.165-.171(#19 DRILL) 2 HOLES
.969
.969
.484
CUTOUT AS SHOWN
3 PLACES
SEE DETAIL "A"
.484
.969
.484
-19 & -21 (REF)
B3
.127-.133 DIA (8)
(#30 DRILL)
B3
.097-.102 DIA(4)
(#40 DRILL)
IML BUP
IML BUP
B3
-19 (REF)
-21 (REF)
.484
.969
3/8
-19
A2
B3
-21
IDENTICAL TO -19 EXCEPT AS SHOWN
B
B
.165-.171(#19 DRILL)
C3
D1
B3
.020 X 45° CHAMFER (-21 ONLY)
VIEW B-B
.015
.005
R (2)
.513
.503
DIA
.480
.470
DETAIL "A"
2X SCALE
1.062
.531
.127-.133 DIA (4)(#30 DRILL)
CUTOUT AS SHOWN
IML BUP
IML B UP
B2
D5
.165-.171(#19 DRILL) (2)
5
1.062
IML BUP
IML BUP
.097-.102 DIA(4)(#40 DRILL)
IML BUP
.531
5/8
-17
A2
BEND R. 1/8

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-10903 D
LDW280-10903 D

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK
LEM
MODEL OR END ITEM
SIZE F
CODE IDENT NO. 26512
LDW280-10903 D
SCALE FULL & NOTED
SHEET 3.00

FOR PHOTO REPRODUCTION
K2

01
NAS 9-1100

LDW280-10904 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23031	LEM-6(36)	1
LEM	LDW280-23031	LEM-5(35)	1
LEM	LDW280-23031	LEM-4(34)	1
LEM	LDW280-23031	LEM-3(33)	1
PART NO. LDW280-10904-17		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28031	LEM-2(32)	1
LEM	LDW280-28031	LEM-1(31)	1
LEM	LDW280-28031	LTA-8(18)	1
PART NO. LDW280-10904-15		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23031	LEM-6(36)	1
LEM	LDW280-23031	LEM-5(35)	1
LEM	LDW280-23031	LEM-4(34)	1
LEM	LDW280-23031	LEM-3(33)	1
LEM	LDW230-28031	LEM-2(32)	1
LEM	LDW280-28031	LEM-1(31)	1
LEM	LDW280-28031	LTA-8(18)	1
PART NO. LDW280-10904-11,-13		GAEC SCH NO. 31-2	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10		2.00		3.00			
REV	B	B		B		B			
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL^c INFO_B		
		PRIM NO.	LE(001)	
LAST DASH NO. USED	-17	215	MP-B	8-13-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 - ±.010 - ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	R. LAMBERT 4-21-66	RELIABILITY	
LAYOUT BY	R. Di MARCO		
CHECKED BY	EG 4-26-66		
GR. LEADER	W. Traut 4/28/66		
VEH DES INT	W. E. BISCHOFF 4/28		
STRUCTURE	5/2	PROJ ENGR	5-9-66
STRUCTURE	Hildermann 5/3	REL GROUP	5-11-66
WEIGHTS	5-6		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT
ASCENT STAGE CABIN
IMU BEAM WIRING

SIZE	CODE IDENT NO.		
B	26512	LDW280-10904	B
SCALE	NONE	SHEET	1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	SH CHG LTR	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	APPD
												REWORK	SCRAP			
A	1	1,1.10,2,3							EO-A1	INITIAL DRAWING RELEASE, PARTS MADE PER EO	LTA-8 LEM-1,-2	NOT	REQ'D.	LAMBERT EG 2-21-66		5-12-66
	2	1.10, 3								REF. EO-A1. ON-15 "8 HOLES" WAS "7 HOLES"						
B	1	1,1.10,2,3							E.O. B1	IN FLD/DWG & B/M ADDED -17 IN MODEL BLOCK ADD FOR -11,-13 &-17 LTA3, LEM-3,-4,-5 & -6	LTA-3, LEM-3 THRU LEM-6	NOT	REQD	YANOFF 7/26/66		
	2	1.00, 1.10								REF. E.O.B1 ON-11,-13 REMOVED LTA-3, LEM-3 THRU-6 N/A LDW28C-28031			✓	WW	WT 8/9/66	8-29-66
	3	1.00,1.10								REF. EOB1 ON-11,-13,-17 REMOVED LTA-3 N/A LDW280-23031	NOTED	NOT	REQD	YANOFF 8/10/66		

FOR CONTINUATION OF REVISIONS SEE SHEET

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10904	B
SCALE	NONE		SHEET 1.10

ENG 77.3 5-64

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10904-17	E	SUPPORT	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 × 7¼ × 2¼	NONE	88	
		LDW280-10904-15	E	SUPPORT	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 × 7 × 2¼	NONE	88	
		LDW280-10904-13	E	SUPPORT	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 × 7 × 2¼	NONE	88	
		LDW280-10904-11	E	SUPPORT	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 × 6⅛ × 2¼	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP-14-9030						

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10904	B

SCALE NONE

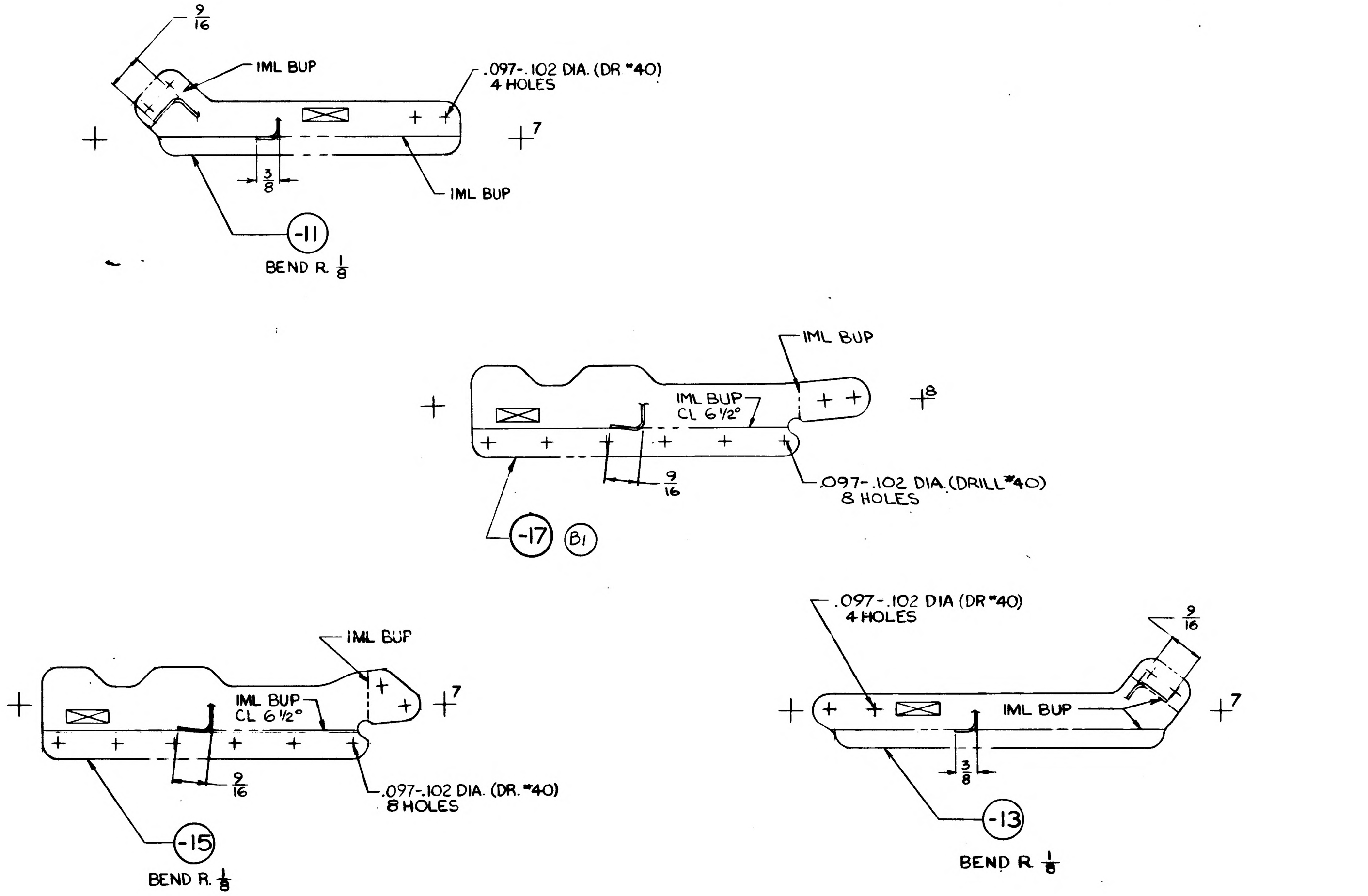
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTE:
NO TOOLING HOLES PERMITTED IN PARTS



25
20
9/16
IML BUP
.097-.102 DIA. (DR #40)
4 HOLES
7
3/8
IML BUP
-11
BEND R. 1/8
IML BUP
IML BUP
CL 6 1/2°
8
9/16
.097-.102 DIA. (DRILL #40)
8 HOLES
-17
B1
IML BUP
IML BUP
CL 6 1/2°
7
9/16
.097-.102 DIA. (DR. #40)
8 HOLES
-15
BEND R. 1/8
.097-.102 DIA (DR #40)
4 HOLES
9/16
IML BUP
7
3/8
-13
BEND R. 1/8

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2 3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-10904	B
SCALE FULL			SHEET 3.00	

FOR PHOTO REPRODUCTION

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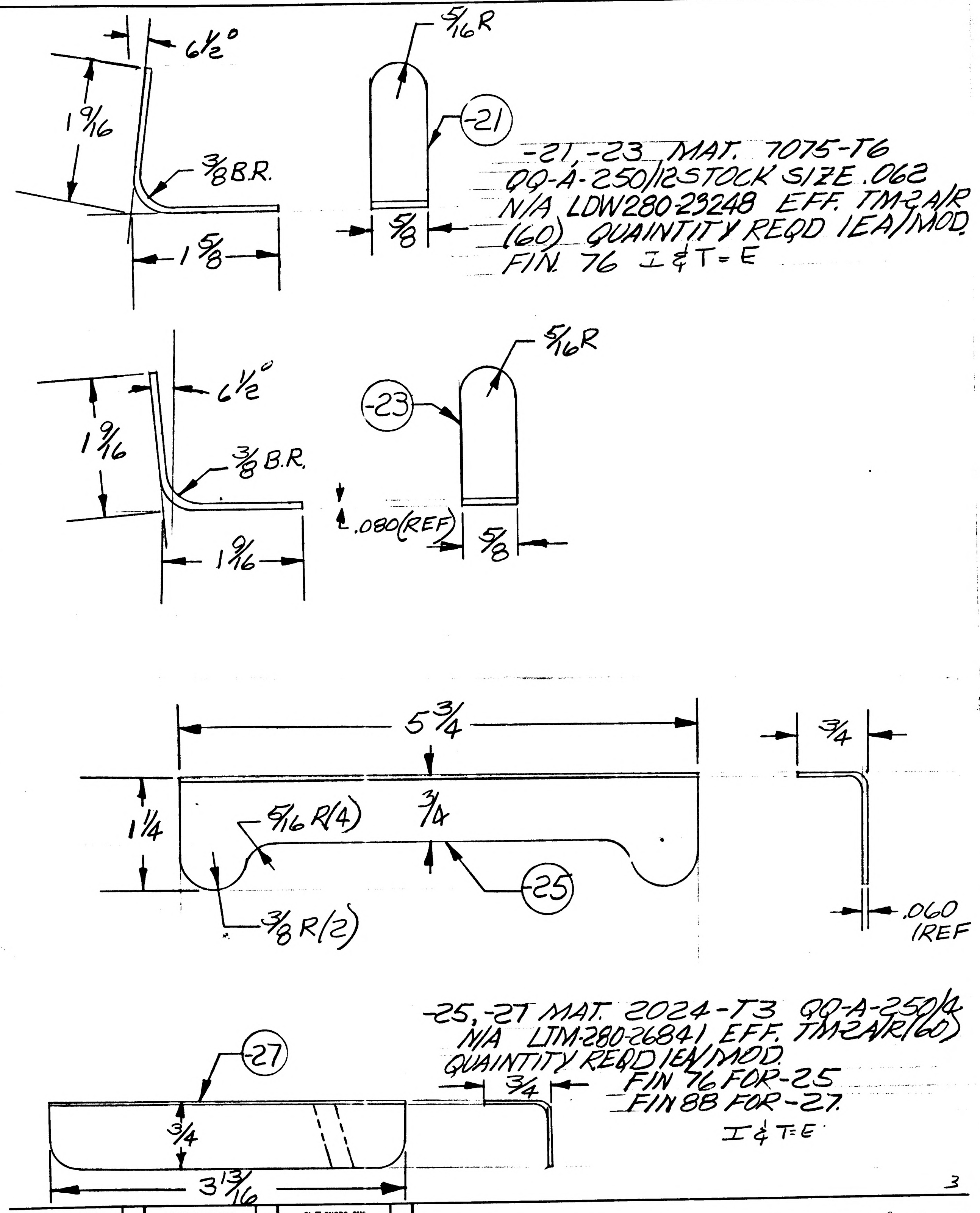
01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER *

DWG. NO. LDW280-10904		EO NO. Z1	
CONTROL INFO NO. LM-3-4198			



6½°
1 9/16
3/8 B.R.
1 5/8
5/16 R
-21
5/8
6½°
1 9/16
3/8 B.R.
1 9/16
5/16 R
-23
.080(REF)
5/8
5 3/4
1 1/4
5/16 R(4)
3/4
3/8 R(2)
-25
3/4
.060 (REF
-27
3/4
3 13/16
3/4

-21,-23 MAT. 7075-T6
QQ-A-250/12 STOCK SIZE .062
N/A LDW280-23248 EFF. TM-2A/R
(60) QUANTITY REQD 1EA/MOD.
FIN. 76 I&T=E

-25,-27 MAT. 2024-T3 QQ-A-250/4
N/A LTM-280-26841 EFF. TM-2A/R(60)
QUANTITY REQD 1EA/MOD.
FIN 76 FOR -25
FIN 88 FOR -27.
I&T=E

3

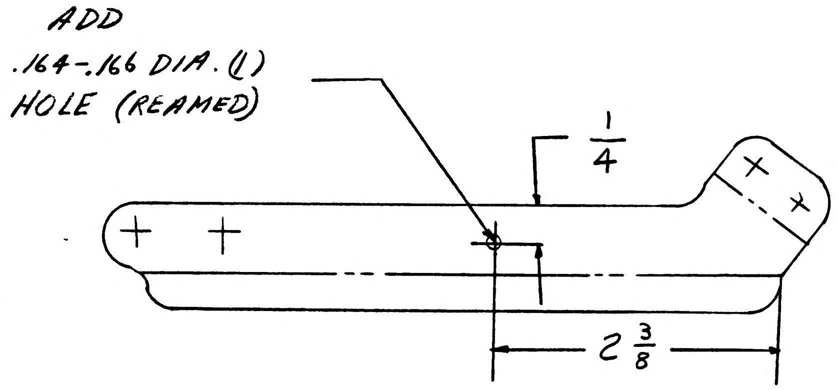
DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG									
REASON FOR EO				DESCRIPTION OF EO									GAEC C EO RELEASE
NEW PARTS REQD FOR PROPER INSTALLATION				IN FLD & BM ADDED -21,-23 -25,-27									FR
MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY	TP		—	BM	Rmc(E)
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.					DATE	12-12-66		—	11-10-66	11-11-66 / 11-14-66 / 11/12/66
LM		TM-2A/R(60)		REVISE DWG ✓	RECORD EO	REWORK ✓	SCRAP	/	VD1 SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG / PROJ ENGRG
				PRIORITY C3	DRAWING TITLE A/S - CABIN - IMU BEAM SUPPORT SUPP.						DRAWING NO. LDW280-10904		EO NO. Z1

ISSUED BY J. KOSLOSKI x2151 SECTION V.D.1 GROUP NO. 335 PL 35

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10904	EO NO. C2
CONTROL INFO NO. LM-5-11161	



LDW280-10904-11
-13

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		3

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
PIGTAIL SUPPORT FOR RGA ASSEMBLY	ON -11 & -13 ADDED .164-.166 DIA (1) HOLE (REAMED)	FR 11/25/6

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: ~~SUB CONTR UNIT NO.~~
LM		LTA-8(18) —	LM-1(31)
LM		LM-2(32)	THRU
LM		LM-(6) 36	

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
✓		✓	

APPROVED BY	WT				JAB	CH	RMC (W)	[illegible]
DATE	11/21/66				11/21/66	11-21-66	11-23-66	11/21/66
/	VDE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SUPPORT ~ ASC. STAGE IMU BEAM WIRING	LDW280-10904	C2

ISSUED BY S DARIST EX 7033 SECTION VD1 (EQUIP LINES) GROUP NO. 332 PL 35

01 NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LEO 280

EO NO. 526

CONTROL INFO NO. LDW280 A5914

TO THE FOLLOWING DRAWINGS LISTED BELOW & THEIR DASH NUMBERS * THAT ARE EFFECTIVE ON LM-6 (36) ADD EFFECTIVITIES FOR LM-7(37) LM-8(38), LM-9(39), LM-10(40), LM-11(41), LM-12(42), LM-13(43), LM-14(44), LM-15(45). QUANTITIES & NA REMAIN THE SAME AS LM-6(36.)

DRAWING NO.	DASH NO *	CHG NO.	TITLE	NEXT ASSY
✓ LDW280-10245	-17, -19	C4	ANGLE CAB. L.H WIND	LDW280-23074
✓ -10261	-13, -15, -17, -19, -20	C1	CHAN M/S BEAM	-54030
✓ -10300	-13, -15	D2	CLIP RH ZO FRM LWR	-54020
✓ -10310	-15	D1	CHAN CAB. WIND AREA	-23074
✓ -10380	-15	C1	SHIM FWD HATCH HINGE	-54083
✓ -10561	-11	A1	WEB M/S ENG SPT. FWD	-23077
✓ -10702	-17	A1	DBLR DOCK TUN.	-23069
✓ -10830	ULTRA SONIC STD. PANEL	B1	FAB. PROC-RCS-HE MDD	H23143
✓ -10833	-11, -13, -15	B2	WEB ECS HEAT EXC SPT	-23253
✓ -10904	-11, -13, -17	C3	SUPT IMU BEAM WIRING	-23031
-23168	-1, -3, -5 & -7	A2	HATCH ASSY DOCK TUNNEL	-23069
M23139	-1	B1	VEE ASSY CAB NVP - LAP	-23066
-11066	-11, -12	A1	CLIP S BAND ANTENNA	-23246
-11110	-11	C1	FTG AEB CAGE STRUT	-23039
-11117	-17, -19	B1	CHANNEL X253 DECK	-23029
-11117	-11, -13 & -15		CHANNEL X253 DECK	-53476
-11159	-15, -17, -18	B2	ZEE SHIELD X253.5	-53476
-11191	-11	C1	SUPT F.F. EQUIP LINES	-54075
-11351	-1 & -3	B2	BRACKET ASSY	-23488
-53078	-1	A7	BEAM INSTL MS Z10.25	-54012
H23903	-5	C4	SKIRT ASSY OXID	LDW280-23901
M10555	-1, -2	A1	CLIP LONGERON CABIN	-23048
-28753	-1	A4	SKIN ASSY DS SC	-28750
-23066	-1	B4	FR IN CAB NA BAS SUP	-54002
-23511	NONE	B3	JIG DATA - REF DWG.	NONE
M11108	-1	B1	BOLT ZO R.H SHIELD SUPT	-51199
-25709	-1	A2	SHIELD INSTL DS EC	-25661
-28362	-3	A2	STRAP ASSY CABIN	-54357
-28645	-3	A2	ACCESS COV INST PLSS	-54553

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

3

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LM-7(37) THRU LM-15 (45) EFF.

Ⓡ GAEC EO RELEASE: JK 3/27/7

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-7(37) THRU	LM-15(45)

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP			SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
✓		NOT REQD		APPROVED BY				—				
				DATE	3/16/67			—	3/20		3-23-67	3/24/67
				6	VOI							

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	NOTED	LEO 280	526

ISSUED BY A. MAICA X1392 SECTION VEH. DES. INTRE GROUP NO. 535 PL 35

01

NAS 9-1100

LDW280-10905 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54303	LM-15(45)	1
	LDW280-54303	LM-14(44)	1
	LDW280-54303	LM-13(43)	1
	LDW280-54303	LM-12(42)	1
	LDW280-54303	LM-11(41)	1
	LDW280-54303	LM-10(40)	1
	LDW280-54303	LM-9(39)	1
	LDW280-54303	LM-8(38)	1
	LDW280-54303	LM-7(37)	1
	LDW280-54303	LM-6(36)	1
	LDW280-54303	LM-5(35)	1
	LDW280-54303	LM-4(34)	1
	LDW280-28303	LM-2(32)	1
	LDW280-28303	LM-1(31)	1
LM	LDW280-28303	LTA-8(18)	1
PART NO. LDW280-10905-2		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28303	LM-3(33)	1
	LDW280-28303	LM-2(32)	1
	LDW280-28303	LM-1(31)	1
	LDW280-28303	LTA-8(18)	1
LM	LDW280-28303	LTA-3(13)	1
LDW280-10905-7			
LM	LDW280-28303	LM-2(32)	2
LM	LDW280-28303	LM-1(31)	2
LM	LDW280-28303	LTA-8(18)	2
PART NO. LDW280-10905-3		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54303	LM-15(45)	2
	LDW280-54303	LM-14(44)	2
	LDW280-54303	LM-13(43)	2
	LDW280-54303	LM-12(42)	2
	LDW280-54303	LM-11(41)	2
	LDW280-54303	LM-10(40)	2
	LDW280-54303	LM-9(39)	2
	LDW280-54303	LM-8(38)	2
	LDW280-54303	LM-7(37)	2
	LDW280-54303	LM-6(36)	2
	LDW280-54303	LM-5(35)	2
	LDW280-54303	LM-4(34)	2
	LDW280-28303	LM-2(32)	2
	LDW280-28303	LM-1(31)	2
LM	LDW280-28303	LTA-8(18)	2
PART NO. LDW280-10905-1		GAEC SCH NO. 31	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.01	1.02	1.10		2.00	3.00		
REV	B	B	B	B		B	B		
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO B			
		PRIM NO.	E(001)		EMF
LAST DASH NO. USED		215	MP-14	8-11-28-6	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.010 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	R.D. MARCO 3-15-66	RELIABILITY	
LAYOUT BY	R.D. MARCO 3-15-66		
CHECKED BY	J.G.		
GROUP LEADER	W. TRAUT 3-16-66		
VDI	W.R. BISCHOFF 3-16-66		
STRUCTURES	HILDERMAN, FEB 3-23-66	PROJ ENGR	J. ALBER 3-28-66
STRUCTURES		REL GROUP	A CARMANICA
WEIGHTS	DJL D. ROBESCH 3-25-66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT ASSEMBLY
ASCENT CABIN-LOWER FRONT FACE
EQUIPMENT LINES

SIZE	CODE IDENT NO.		
B	26512	LDW280-10905	B
SCALE NONE		SHEET 1.00 OF 6	

ENG 77.1 12-65

SUPERSEDES LDW280-10905, NO CHANGE, 3-15-66

01 NAS 9-1100

LDW280-10905 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54303	LM-15(45)	2
	LDW280-54303	LM-14(44)	2
	LDW280-54303	LM-13(43)	2
	LDW280-54303	LM-12(42)	2
	LDW280-54303	LM-11(41)	2
	LDW280-54303	LM-10(40)	2
	LDW280-54303	LM-9(39)	2
	LDW280-54303	LM-8(38)	2
	LDW280-54303	LM-7(37)	2
	LDW280-54303	LM-6(36)	2
	LDW280-54303	LM-5(35)	2
	LDW280-54303	LM-4(34)	2
	LDW280-28303	LM-3(33)	2
	LDW280-28303	LM-2(32)	2
	LDW280-28303	LM-1(31)	2
	LDW280-28303	LTA-8(18)	2
LM	LDW280-28303	LTA-3(13)	2
PART NO. LDW280-10905-21			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28303	LM-3(33)	1
LM	LDW280-28303	LTA-3(13)	1
LDW280-10905-33			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28303	LM-2(32)	1
LM	LDW280-28303	LM-1(31)	1
LM	LDW280-28303	LTA-8(18)	1
PART NO. LDW280-10905-9			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54303	LM-15(45)	1
	LDW280-54303	LM-14(44)	1
	LDW280-54303	LM-13(43)	1
	LDW280-54303	LM-12(42)	1
	LDW280-54303	LM-11(41)	1
	LDW280-54303	LM-10(40)	1
	LDW280-54303	LM-9(39)	1
	LDW280-54303	LM-8(38)	1
	LDW280-54303	LM-7(37)	1
	LDW280-54303	LM-6(36)	1
	LDW280-54303	LM-5(35)	1
	LDW280-54303	LM-4(34)	1
	LDW280-28303	LM-3(33)	1
	LDW280-28303	LM-2(32)	1
	LDW280-28303	LM-1(31)	1
	LDW280-28303	LTA-8(18)	1
LM	LDW280-28303	LTA-3(13)	1
PART NO. LDW280-10905-5			

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET											
REV											
SHEET											
REV											
SHEET											
REV											

LAST SECT LTR USED

LAST DASH NO. USED

GRUMMAN REL INFO

PRIM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO.

LINE ITEM

DOCUMENTATION TYPE

DRAWN BY

LAYOUT BY

CHECKED BY

PROJ ENGR

REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW 280-10905	B
SCALE NONE		SHEET 1.01 OF	

ENG 77.1 12-65

01

NAS 9-1100

LDW280-10905 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO.			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54303	LM-15(45)	1
	LDW280-54303	LM-14(44)	1
	LDW280-54303	LM-13(43)	1
	LDW280-54303	LM-12(42)	1
	LDW280-54303	LM-11(41)	1
	LDW280-54303	LM-10(40)	1
	LDW280-54303	LM-9(39)	1
	LDW280-54303	LM-8(38)	1
	LDW280-54303	LM-7(37)	1
	LDW280-54303	LM-6(36)	1
	LDW280-54303	LM-5(35)	1
	LDW280-54303	LM-4(34)	1
	LDW280-28303	LM-3(33)	2
LM	LDW280-28303	LTA-3(13)	2
PART NO. LDW280-10905-31			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54303	LM-15(45)	1 EA
	LDW280-54303	LM-14(44)	1 EA
	LDW280-54303	LM-13(43)	1 EA
	LDW280-54303	LM-12(42)	1 EA
	LDW280-54303	LM-11(41)	1 EA
	LDW280-54303	LM-10(40)	1 EA
	LDW280-54303	LM-9(39)	1 EA
	LDW280-54303	LM-8(38)	1 EA
	LDW280-54303	LM-7(37)	1 EA
	LDW280-54303	LM-6(36)	1 EA
	LDW280-54303	LM-5(35)	1 EA
	LDW280-54303	LM-4(34)	1 EA
	LDW280-28303	LM-3(33)	1 EA
	LDW280-28303	LM-2(32)	1 EA
	LDW280-28303	LM-1(31)	1 EA
	LDW280-28303	LTA-8(18)	1 EA
LM	LDW280-28303	LTA-3(13)	1 EA
PART NO. LDW280-10905-23,-24,-25			

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH
SHEET
REV
SHEET
REV
SHEET
REV
LAST SECT LTR USED
LAST DASH NO. USED
GRUMMAN REL INFO
PRIM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

~~CONTRACT NO.~~
DRAWN BY
LAYOUT BY
CHECKED BY
PROJ ENGR
REL GROUP

~~LINE ITEM~~
~~DOCUMENTATION TYPE~~

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10905	B
SCALE	NONE	SHEET 1.02 OF	

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED NO CHANGE. LAST REVISION NO CHANGE. P. CARTSELOS ADDED SH 1.01, 1.02, 1.10, 2.00 & 3.00		10-28-	66			
A	1	1.00, 1.01 1.02, 1.10 2.00, 3.00						EO A1	IN FIELD & B/M ADDED -21, -25; -23, -24 ASSYS; TRIMMED -3, -9; REMOVED (1)-1 & (1)-2.	LTA-8, LM-1, LM-2	✓		P. CARTSELOS 11-1-66		
	2	1.10, 2.00, 3.00						EO A2	IN FIELD & B/M (ON -3, -5, -7, -9, -21, -24, -25) NAS 1097AD3 (TYP) WAS MS20426AD3 (TYP)						
	3	1.10						EO A3	EO A3 SUPERSEDED BY EO A4	NOT REQD	NOT	REQD			
	4	1.00, 1.01 1.02, 1.10						EO A4	EO A4 SUPERSEDES EO A3. ON -3 THRU -9, -21, -23, -24, -25, ADDED LTA-3 (13) & LM-3 (33) EFF.	NOTED					
	5	1.10, 3.00						EO A5	IN FIELD FOR -13 ADDED JOG DN .045-.055 ON -13 ONLY, & 1/2 DIM.	LTA-3, -8; LM-1, -2, -3	✓				
	6	1.00, 1.02 1.10, 2.00 3.00						EO A6	ADDED -31, -33, -35, -37, MS20426AD3(10), NAS697A08(5) RESTRICTED -3, -9, -11, -17.			✓			
B	1	1.10						EO B1	EO B1 SUPERSEDED BY EO B2	NOT REQD	NOT	REQD			
	2	1.10						EO B2	EO B2 SUPERSEDED BY EO B4						
	3	1.01, 1.02 1.10						EO B3	IN MODEL BLOCK FOR -21, -23, -24, -25 ADDED N/A OF LDW280-54303, EFF LM-4 (34) THRU LM-15 (45). QTY REQD/MOD (2)-21; (1)-23, -24, -25	LM-4 THRU LM-15	✓				
	4	1.00, 1.01 1.02, 1.10						EO B4	EO B4 SUPERSEDES EO B2. ADDED ADDITIONAL REQUIREMENTS FOR -1, -2, -5, -21, -23, -24 & -31, & NEXT ASSY		NOT	REQD			
	5	1.10, 2, 3							REF EO A1: -2(SHOWN), -1(OPP), -24(SHOWN) & -23(OPP) SHOULD BE RESPECTIVELY -2(OPP), -1(SHOWN), -24(OPP) & -23(SHOWN)	LTA-8, LM-1, LM-2	✓		CB RMS	RMC 11-18-66	11/18/66
	6								REF EO A2: -21 NOT APPLICABLE; -24 SHOULD BE -23 (REF, REF EO A1)						
	7							AEB	REF EO A6: DRILL NO. 1 SHOULD BE DRILL NO. 19, & 6 EQUAL SPACES (ACROSS NUT PLATES) SHOULD BE 4 EQUAL SPACES. MS20426AD3(10) SHOULD BE NAS1097AD3(10). CORRECTED ARROW ACROSS NUT PLATES DIM; "----SAME AS -11, -17, -3, -9 RESP." S/B "-3, -9, -11, -17 RESP."	LTA-3, LTA-8, LM-1, LM-2, LM-3		✓			

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY
A						
B	—					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10905	B

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

-33	-31	-25	-24	-23	-9	-7	-5	-3	-2	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
												MS20426AD3	E	RIVET	STD PART						
												NAS1097AD3		RIVET	STD PART						
5	5	4	4	4	5	6	5	5	4	4		NAS697A08		NUT, PLATE	STD PART						
1												LDW280-10905-37		BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.032 x 3 x 6	NONE	88	
	1											-35		BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.032 x 3 x 5		88	
												-33		BRACKET ASSY						NONE	
												-31		BRACKET ASSY						NONE	
		1										-29		BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.032 x 3 x 5		88	
			1									-28		BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.032 x 3 x 5		88	
				1								-27		BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.032 x 3 x 5		88	
												-25		BRACKET ASSY						NONE	
												-24		BRACKET ASSY						NONE	
												-23		BRACKET ASSY						NONE	
												-21		CLIP	AL ALLOY SH	QQ-A-250/4	2024-T3	.050 x 2 x 4		88	
									1			-20		BRACKET				.032 x 3 x 6			
										1		-19						.032 x 3 x 6			
					1							-17						.032 x 2 x 6			
						1						-15						032 x 3 x 7			
							1					-13						.032 x 3 x 6			
								1				-11		BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.032 x 2 x 5		88	
												-9		BRACKET ASSY						NONE	
												-7									
												-5									
												-3									
												-2									
												LDW280-10905-1	E	BRACKET ASSY					NONE	NONE	

QTY PER ASSEMBLY

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030

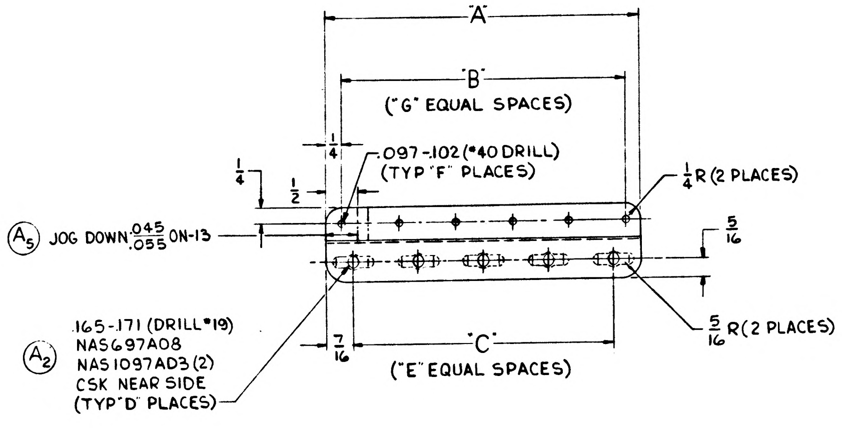
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

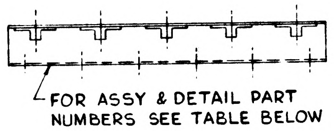
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

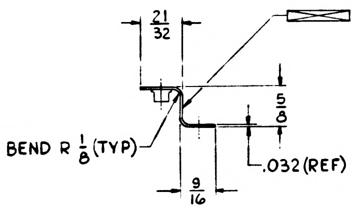
SIZE	CODE IDENT NO.		
B	26512	LDW280-10905	B
SCALE NONE		SHEET 2.00	

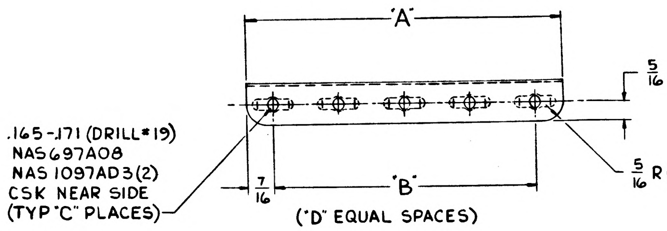
ENG 77.2 7-65

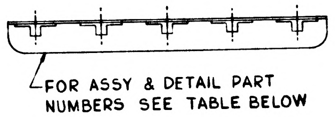
01 NAS 9-1100

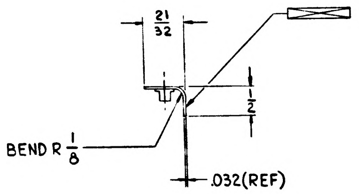

"A"
"B"
("G" EQUAL SPACES)
.097-.102 (#40 DRILL)
(TYP "F" PLACES)
1/4 R (2 PLACES)
1/4
1/2
5/16
(A5) JOG DOWN .045/.055 ON-13
.165-.171 (DRILL #19)
NAS697A08
NAS1097AD3(2)
CSK NEAR SIDE
(TYP "D" PLACES)
(A2)
7/16
"C"
("E" EQUAL SPACES)
5/16 R (2 PLACES)


FOR ASSY & DETAIL PART
NUMBERS SEE TABLE BELOW


21/32
5/8
BEND R 1/8 (TYP)
.032(REF)
9/16


"A"
5/16
.165-.171 (DRILL #19)
NAS697A08
NAS1097AD3(2)
CSK NEAR SIDE
(TYP "C" PLACES)
7/16
"B"
("D" EQUAL SPACES)
5/16 R (2 PLACES)


FOR ASSY & DETAIL PART
NUMBERS SEE TABLE BELOW


21/32
1/2
BEND R 1/8
.032(REF)

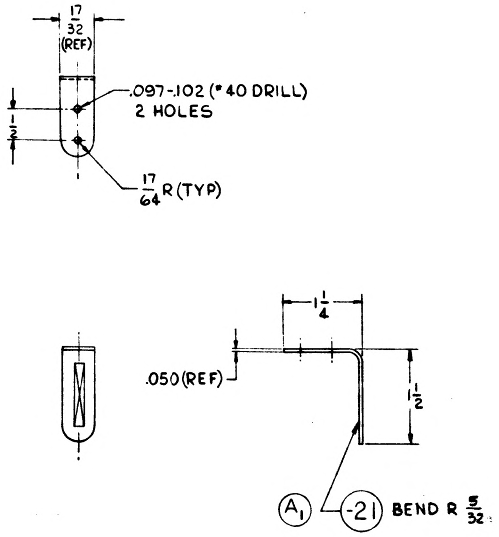
(A1)

ASSY NO.	DETAIL NO.	"A"	"B"	"C"	"D"
LDW280-10905-3	LDW280-10905-11	4 1/2	3 5/8	5	4
LDW280-10905-9	LDW280-10905-17	5	4 1/8	5	4

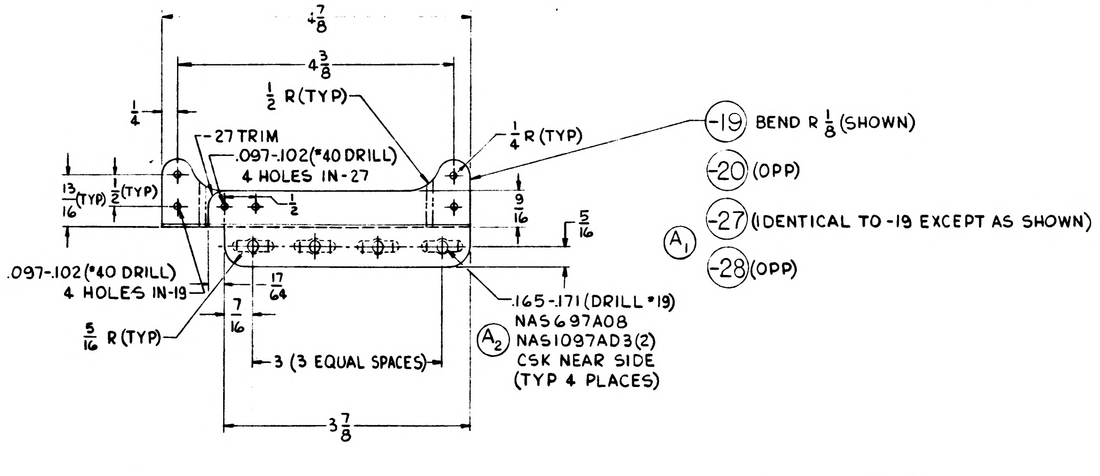
(A1) (A6)

ASSY NO.	DETAIL NO.	"A"	"B"	"C"	"D"	"E"	"F"	"G"
LDW280-10905-5	LDW280-10905-13	4 7/8	4 3/8	4	5	4	6	5
LDW280-10905-7	LDW280-10905-15	6 1/4	5 3/4	5 3/8	6	5	7	6
LDW280-10905-25	LDW280-10905-29	4	3 1/2	3	4	3	5	4
LDW280-10905-31	LDW280-10905-35	4 1/2	4	3 5/8	5	4	6	5
LDW280-10905-33	LDW280-10905-37	5	4 1/2	4 1/8	5	4	6	5

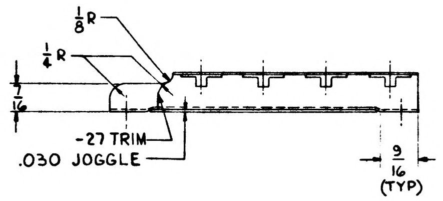
NAS 9-1100

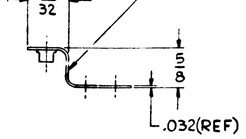

17/32 (REF)
.097-.102 (#40 DRILL)
2 HOLES
1/2
17/64 R (TYP)
1 1/4
.050(REF)
1/2

(A1) -21 BEND R 5/32


4 7/8
4 3/8
1/2 R (TYP)
1/4
-27 TRIM
.097-.102 (#40 DRILL)
4 HOLES IN -27
1/4 R (TYP)
13/16 (TYP)
1/2 (TYP)
9/16
5/16
1/2
.097-.102 (#40 DRILL)
4 HOLES IN -19
17/64
7/16
5/16 R (TYP)
3 (3 EQUAL SPACES)
.165-.171 (DRILL #19)
NAS697A08
(A2) NAS1097AD3(2)
CSK NEAR SIDE
(TYP 4 PLACES)
3 7/8

-19 BEND R 1/8 (SHOWN)
-20 (OPP)
(A1) -27 (IDENTICAL TO -19 EXCEPT AS SHOWN)
-28 (OPP)


1/8 R
1/4 R
7/16
-27 TRIM
.030 JOGGLE
9/16 (TYP)


21/32
5/8
.032(REF)

LDW280-10905-1 ASSY (SHOWN)
-2 ASSY (OPP)
(A1) -23 ASSY (IDENTICAL TO -1 EXCEPT AS SHOWN)
-24 ASSY (OPP)

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD 10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	✓
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	E	26512	LDW280-10905	3
	SCALE FULL			SHEET 3.00

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW280-10905
EO NO. C1
CONTROL INFO NO. LM-5-11035

IN MODEL BLOCK REVISE REQUIREMENTS FOR LM-3 ONLY AS FOLLOWS:

LDW280-10905-24; 3 REQD (WAS 2 REQD), N/A LDW280-28303.

LDW280-10905-7; 2 REQD (WAS 1 REQD), N/A LDW280-28303.

(REF EO LDW280-28303, CN LM-5-11036) 5

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: TO PROVIDE SUPPORT FOR EQUIP LINES

DESCRIPTION OF EO: IN -7 MODEL BLOCK, FOR NEXT ASSY. LDW280-28303, (2) REQD. WAS (1). IN -24 MODEL BLOCK, FOR NEXT ASSY. LDW280-28303, (3) REQD. WAS (2)

GAEC EO RELEASE ✓: FR

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3 (33)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		NOT REQD	

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY	WT			~	R	CH	WP	LP
DATE	11/5/66			~	11/5	11-5-66	11-4-66	11/9/66
/	VD1							

PRIORITY: C

DRAWING TITLE: SUPPORT ASSY - A/S - CABIN - LWR F/F - EQ. LINES

DRAWING NO.: LDW280-10905

EO NO.: C1

ISSUED BY HARRIGAN 11/5/66

SECTION VD1

GROUP NO. 335 PL 5

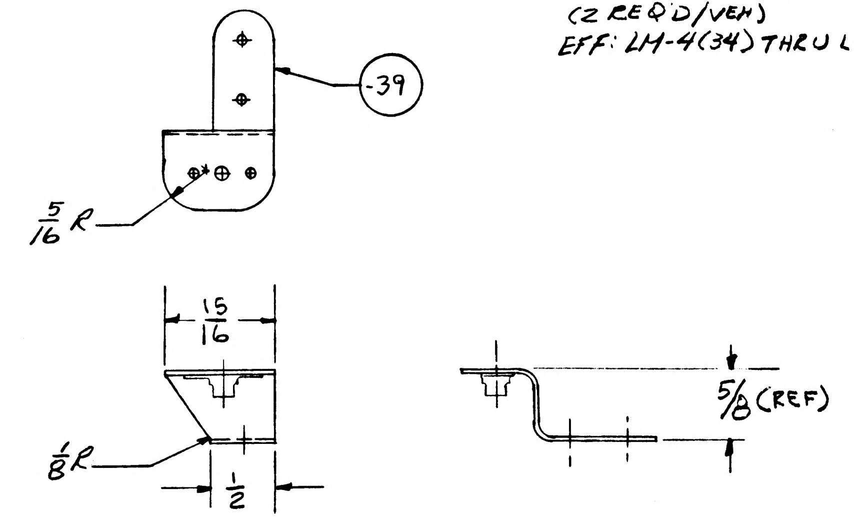
01 NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10905	EO NO. C2
CONTROL INFO NO. LDW280A-5294	

FOR -39:
N/A LDW280-54303
(2 REQD/VEH)
EFF: LM-4(34) THRU LM-15(45)



CREATE -39 IDENTICAL TO -1 (EXCEPT AS NOTED)

IN M/B:

REMOVE LM-4 THRU LM-15 REQ'TS FOR -5, -23 & -25
ADD -39 LM-4 THRU LM-15 N/A LDW280-54303 2 REQD/VEH
FOR -1 LM-4 THRU LM-15 1 REQD/VEH WAS 2 REQD/VEH
-2 LM-4 THRU LM-15 2 REQD/VEH WAS 1 REQD/VEH
-21 LM-4 THRU LM-15 1 REQD/VEH WAS 2 REQD/VEH
-31 LM-4 THRU LM-15 2 REQD/VEH WAS 1 REQD/VEH

01 NAS 9-1100

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

REASON FOR EO: EQUIP. LINES RELOCATED DETAIL PARTS NOT NEEDED

DESCRIPTION OF EO: CREATED -39. IN M/B: REMOVED LM-4 THRU LM-15 REQ'TS FOR -5, -23 & -25. FOR LM-4 THRU LM-15 REVISED QTY'S. ON -1 (1) WAS (2), -2 (2) WAS (1), -21 (1) WAS (2), -31 (2) WAS (1)

GAEC EO RELEASE: 2/14/7

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-4(34)	
		THRU	
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK SCRAP ✓

APPROVED BY				JW/CHC					
DATE	1/26/67			1-26-67	2-9		2-9-67	2/10/67
1	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: C
DRAWING TITLE: SUPPT ASSY ASCENT CABIN LWR FRONT FACE EQUIP. LINES
DRAWING NO. LDW280-10905
EO NO. C2

ISSUED BY M. SHAPIRO X1153 SECTION EQUIP LINES GROUP NO. 332 PL 35

ENG 32.1 REV 3-65

A

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10905
EO NO. C3
CONTROL INFO NO. LM-3-4740

THIS IS A REVISION OF EO C-2
ADD -41 DETAIL SAME AS -19 EXCEPT AS SHOWN ON EO-C-2, -39 CONSISTS OF -41, NAS697A08(1) & NAS1097AD3(2)

FOR -2 QUANTITY REQD/MOD 2 (WAS) 1 FOR N/A LDW280-54303 ONLY
FOR -1 " " " 1 (WAS) 2 " " " " "

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐ 3

REASON FOR EO: DETAIL PART REQD FOR ASSY.

DESCRIPTION OF EO: REF EO C-2
ADDED -41 DETAIL. FOR -2 QUAN. REQD 2 (WAS) 1 FOR -1 QUAN. REQD 1 (WAS) 2 FOR LDW280-54303

GAEC EO RELEASE: C JK

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-4(34) THRU LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK SCRAP ✓

APPROVED BY	70R			—	BM			
DATE	4-12-67			—	2-20-67	2-20-67	2-21-67	2/29/67
/	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: C3
DRAWING TITLE: SUPPT ASSY A/S LWR - F/E - EQUIP LINES.
DRAWING NO.: LDW280-10905
EO NO.: C3

ISSUED BY LIAISON ~ J. KOSLOSKI X2151 SECTION Y.D.1. GROUP NO. 335 PL 35

LDW280-10906 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54308	LM-15(45)	4
		LM-14(44)	4
		LM-13(43)	4
		LM-12(42)	4
		LM-11(41)	4
		LM-10(40)	4
		LM-9(39)	4
		LM-8(38)	4
		LM-7(37)	4
		LM-6(36)	4
		LM-5(35)	4
	LDW280-54308	LM-4(34)	4
	LDW280-23308	LTA-3(33)	2
	LDW280-28308	LTA-8(34)	2
		LM-3(33)	2
		LM-2(32)	2
LM	LDW280-28308	LM-1(31)	2
PART NO. LDW280-10906-9		GAEC SCH NO. 32	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO	REQD PER MODULE OR END ITEM
LM	LDW280-23308	LTA-3(33)	1 EA
	LDW280-28308	LTA-8(34)	1
		LM-3(33)	1
		LM-2(32)	1
LM	LDW280-28308	LM-1(31)	1 EA
PART NO. LDW280-10906-7&-8		GAEC SCH NO. 32	

LM	LDW280-54308	LM-15(45)	1 EA
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
	LDW280-54308	LM-4(34)	1
	LDW280-23308	LTA-3(13)	1
	LDW280-28308	LTA-8(18)	1
		LM-3(33)	1
		LM-2(32)	1
'LM	LDW280-28308	LM-1(31)	1 EA

PART NO. LDW280-10906-3&-5

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23308	LTA-3(13)	2
	LDW280-28308	LTA-8(18)	2
		LM-3(33)	2
		LM-2(32)	2
LM	LDW280-28308	LM-1(31)	2
PART NO. LDW280-10906-1		GAEC SCH NO. 32	

WORK PKG. FUNCTION NO. 110 3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED —
LAST DASH NO. USED -19

GRUMMAN REL INFO A
PRIM NO. 215 VK(001) MP-6A-4/6/7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ± 1/32 ± .010 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM
DOCUMENTATION TYPE II

DRAWN BY	J. CARROL 3-19-67
LAYOUT BY	J. CARROL 3-19-67
CHECKED BY	
GR LEADER	W. TRAUT 3-21-66
VEH DES INT	W. BISCHOFF 8-21-66
STRUCTURE	R. HILDERMAN 5-22
STRUCTURE	J. VISCONTI 5-22
WEIGHTS	D. ROBESCH 3-25
PROJ ENGR	J. ALBER 2-28-66
REL GROUP	A. CARAMANICA 3-30

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET ASSEMBLY
ASCENT MID-SECTION. EQUIP. LINES
-Z 27 FWD

SIZE B CODE IDENT NO. 26512 LDW280-10906 A
SCALE NONE SHEET 1.00 OF 4

ENG 77 1 12-65

SUPERSEDES LDW280-10906 NO CHG 2-30-66.

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE, LAST REVISION NO CHANGE ADDED SH 1.10, 2.00, 3.00. LOFTED DWG. WAS DIM. T. MAYBO 3-31-67						
A	1	1.00						E O. A1	INCREASED EFFECTIVITY REQUIREMENTS FOR -1, -3, -5, -7, -8 & -9 ASSY ADDED N/A REQUIREMENT LDW280-23308 ADDED QUANTITY REQUIREMENTS	LTA-3	NOT	REQ'D	TOM MAYBO 3-31-67		
	2	1.00						E O. A2	TO -1, -3, -5, -7, -8 & -9 ADDED EFFECT. LM-3 THRU LM-15	LM-3 THRU LM-15	NOT	REQ'D			
	3	1.00						E O. A3	ON-1, -7, -8 REMOVE EFF LM-4 THRU LM-15 ON-3, -5, -9 N/A LDW280-54308 (WAS LDW280-28308) ON-9 NO. REQD 4 (WAS 2)	LM-4 THRU LM-15		-1 -7 -8			
	4	ALL						E O. A4	IN FLD (-7 & -8) & BM ADDED NAS697A08(3) & MS20426 AD3 (6), (FOR-9) ADDED NAS697AD8(2) & MS20426AD3(4) (FOR-1) NAS697A08(3) WAS NAS679A08(3)	LTA-8 & -3 LM-1 THRU LM-15	✓				
	5	3.00							ON-5 ASSY 5/16 (2) SHOULD BE 7/16 (2), DWG ERROR CORRECTION.	NOT REQ'D	NOT	REQD			

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURE	STRUCTURE	WEIGHTS	RELIABILITY				
A										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10906	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY																
-9	-8	-7	-5	-3	-1	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
						MS20426AD3	E		RIVET	STD PART						
2	3	3	5	5	3	NAS697A08			NUT PLATE	STD PART						
1						LDW280-10906-19			ANGLE	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 x 2 x 3	NONE	88	
	1					-18			ANGLE				.040 x 2 x 4			
		1				-17			ANGLE				.040 x 2 x 4			
			1			-15			BRACKET				.040 x 3 x 7			
				1		-13			BRACKET				.040 x 3 x 7			
					1	-11			ANGLE	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 x 2 x 4	NONE	88	
						-9			ANGLE ASSY					NONE	NONE	
						-8			ANGLE ASSY							
						-7			ANGLE ASSY							
						-5			BRACKET ASSY							
						-3			BRACKET ASSY							
						LDW280-109061	E		ANGLE ASSY					NONE	NONE	

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP 14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10906	A

SCALE NONE

SHEET 2.00

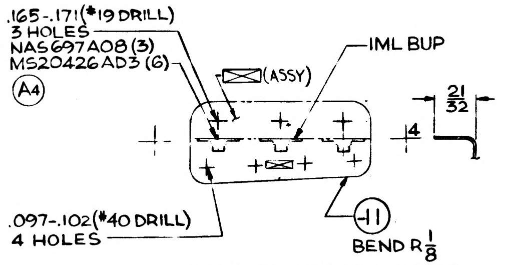
ENG 77.2 5-64

01

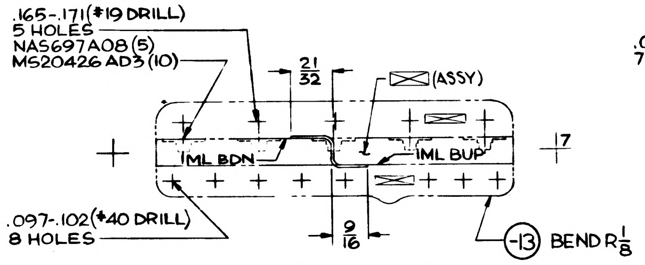
NAS 9-1100

LDW280-10906 A

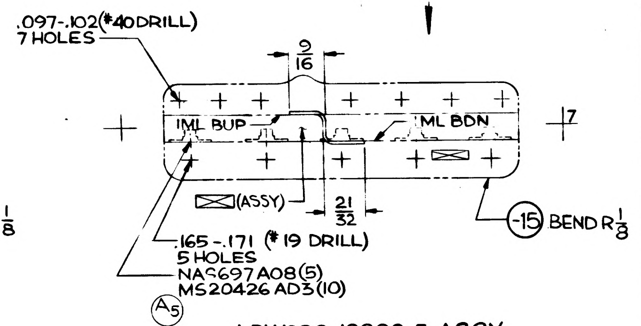
NOTE :
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. INSTALL FASTENERS PER LSP 14-15302.


.165-.171(#19 DRILL)
3 HOLES
NAS697A08 (3)
MS20426AD3 (6)
A4
(ASSY)
IML BUP
4
21/32
.097-.102(#40 DRILL)
4 HOLES
-11
BEND R 1/8

LDW280-10906-1 ASSY

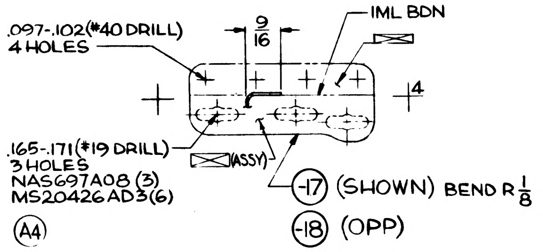

.165-.171(#19 DRILL)
5 HOLES
NAS697A08(5)
MS20426 AD3 (10)
21/32
(ASSY)
IML BDN
IML BUP
17
.097-.102(#40 DRILL)
8 HOLES
9/16
-13
BEND R 1/8

LDW280-10906-3 ASSY

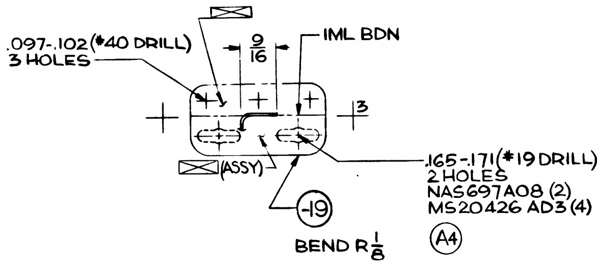

.097-.102(#40 DRILL)
7 HOLES
9/16
IML BUP
IML BDN
7
(ASSY)
21/32
.165-.171 (#19 DRILL)
5 HOLES
NAS697A08(5)
MS20426 AD3(10)
A5
-15
BEND R 1/8

LDW280-10906-5 ASSY

25
15


.097-.102(#40 DRILL)
4 HOLES
9/16
IML BDN
4
.165-.171(#19 DRILL)
3 HOLES
NAS697A08 (3)
MS20426AD3(6)
(ASSY)
A4
-17 (SHOWN) BEND R 1/8
-18 (OPP)

LDW280-10906-7 ASSY (SHOWN)
-8 ASSY (OPP)


.097-.102 (#40 DRILL)
3 HOLES
9/16
IML BDN
13
(ASSY)
.165-.171(#19 DRILL)
2 HOLES
NAS697A08 (2)
MS20426 AD3 (4)
A4
-19
BEND R 1/8

LDW280-10906-9 ASSY

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY~~.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-10906A

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	D	26512	LDW280-10906	A
	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

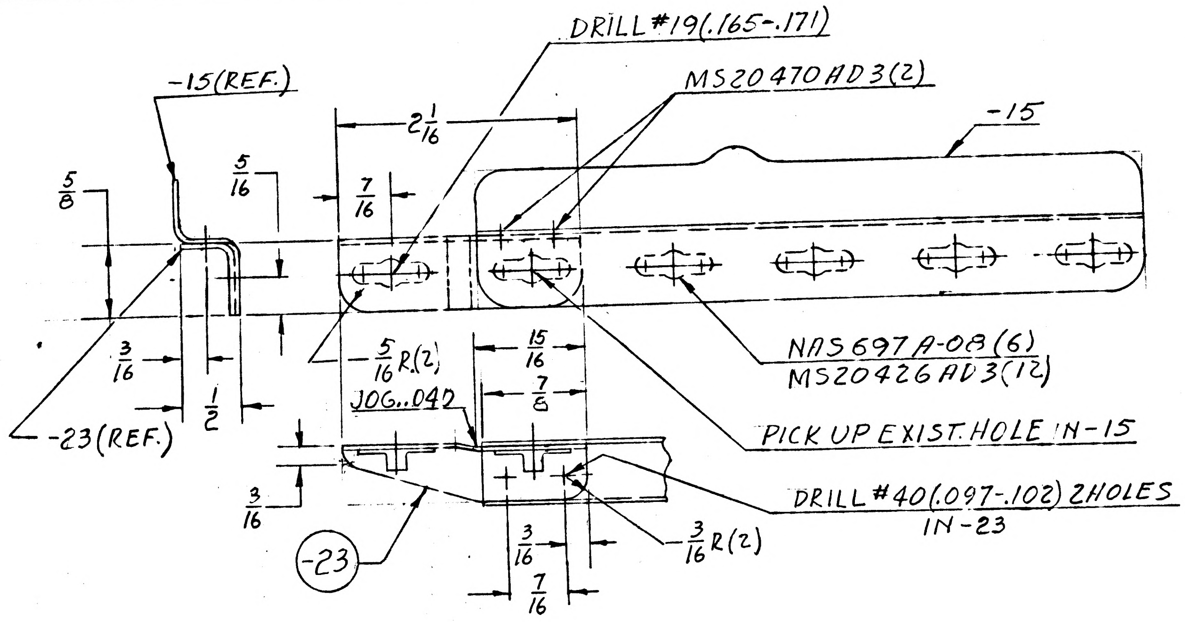
NAS 9-1100

01
NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10906
EO NO. B1
CONTROL INFO NO. LDW280-B-2809


DRILL #19(.165-.171)
MS20470AD3(2)
-15
-15(REF.)
5/8
5/16
7/16
2 1/16
3/16
1/2
-23(REF.)
-5/16 R(2)
15/16
7/8
JOG..040
NAS697A-08(6)
MS20426AD3(12)
PICK UP EXIST. HOLE IN -15
DRILL #40(.097-.102) 2 HOLES IN -23
3/16
3/16 R(2)
3/16
7/16
-23

LDN280-10906-21 ASSY

ADD LDW280-10906-23 ANGLE 1 REQ'D/MOD EFF. LM-5(35) THRU LM-15(45)
MAT'L. .040 AL. AL. SH. 2024 H.T. TO T42 QQ-A-250/4
FINISH #88 ANODIZE LSP14-9030 B.R. 3/32

ADD -21 ASSY. AS SHOWN
N/A LDW280-54308 1 REQ'D/MOD
EFF. LM-5(35) THRU LM-15(45).

RESTRICT -5 TO LTA-3(13), LTA-8(18), LM-1(31) THRU LM-4(34) EFF.
WAS LTA-3(13), LTA-8(18), LM-1(31) THRU LM-15(45)

NOTE
DIMENSIONS ARE FOR DRAFTING PURPOSES ONLY
DO NOT ADD TO DWG.

✱ -5 ASSY. MAY BE REWORKED INTO -21 ASSY

DETAIL SPEC REQ ☐	CL II ENGRG CHG ☐	CL I ENGRG CHG ☑	LCD 2769 PKG. #2 (5)

REASON FOR EO: TO PROVIDE STRUCTURE FOR MOUNTING PRESSURE SWITCH

DESCRIPTION OF EO: ADDED -21 ASSY. & -23 ANGLE - RESTRICTED -5 TO LTA-3(13), LTA-8(18) LM-1(31) THRU LM-4(34) EFF. WAS LTA-3(13), LTA-8(18), LM-1(31) THRU LM-15(45)

GAEC EO RELEASE: C JK 4/15/68

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-5(35) THRU	
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✱	

PRIORITY: C

APPROVED BY								
DATE	4/11/68			4-10-68		4/12/68	4-15-68
C	V.D.I	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

DRAWING TITLE: BRACKET ASSY. A/S-M/S-EQUIP. LINES--Z27 FWD.
DRAWING NO. LDW280-10906
EO NO. B1

4/10/68
ISSUED BY A. PROKOPETZ / F. DERESPINIS SECTION V.D.I. X7033 GROUP NO. 335 PL 25

LDW280-10907 A

LM	LDW280-53310	LM-3(33)	1
LM	LDW280-28310	LM-2(32)	1
LM	LDW280-28310	LM-1(31)	1
LM	LDW280-28310	LTA-8(18)	1
MODULE OR END ITEM	NEXT ASSY		
LDW280-10907-21			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28310	LM-2(32)	2
LM	LDW280-28310	LM-1(31)	2
LM	LDW280-28310	LTA-8(18)	2
PART NO. LDW280-10907-9		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53310	LM-3(33)	4
LM	LDW280-28310	LM-2(32)	4
LM	LDW280-28310	LM-1(31)	4
LM	LDW280-28310	LTA-8(18)	4
PART NO. LDW280-10907 -7		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28310	LM-2(32)	1 EA
LM	LDW280-28310	LM-1(31)	1 EA
LM	LDW280-28310	LTA-8(18)	1 EA
PART NO. LDW280-10907-25,-26,-5 & -6		GAEC SCH NO. 31	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -28

GRUMMAN REL INFO A

PRIM NO. 233

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED

FRACTIONS - DECIMALS – ANGLES

± 1/32 ± .010 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM #1

DOCUMENTATION TYPE II

DRAWN BY	HARRIFAN 3/19		
LAYOUT BY			
CHECKED BY			
GRP LEADER	W. TRAUT 3/22/66		
VDI	BISCHOFF		
STRUCT	FEB 3/23/66	PROJ ENGR	ALBERT 3/28/66
STRUCT	HILDERMAN 3/23	REL GROUP	CHUCK IFF
WEIGHTS	ROBESCH 3/25		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET ASSEMBLY
ASCENT- MID SECTION
+Z27 EQUIP LINES

SIZE B | CODE IDENT NO. 26512 | LDW280-10907 | A

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-10907 NC

3-28-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED NO CHG LAST REV. NC - KLUGE 11-7-66 ADDED SH 1.10, 2.00, 3.00 - LOFTED WAS DIMENSION DWG	NOT REQ'D	NOT	REQ'D			
A	1	1.00, 1.10, 2.00, 3.00						EO A1	IN FLD, B/M & MOD BLK CREATED -21, -25 & -26 ASSYS SAME AS & TO REPLACE -1, -3, & -4 RESP.	LTA-8, LM-1, -2		-1, -3 & -4	R. KLUGE 7 NOV 66		
	2	1.00, 1.10						EO A2	IN MOD/BLK ADD EFFECTIVITY OF LM-3 THRU LM-15 TO -7 ASSY & -21 BRACKET	LM-3 THRU -15	NOT	REQ'D			
	3	1.00, 1.10						LEO280-264	FOR -7 & -21 REMOVED EFF LM-4 THRU LM-15	LM-4 THRU -15		✓			
	4	1.00, 1.10, 2.00, 3.00						EO A4	IN FLD (ON -23) DRILL #40(6) WAS (1) ADDED LOCATING DIMENSIONS	LTA-8, LM-1, -2, -3	✓				

CHG APPROVED

LTR	GROUP LDR	VDI	STRUCTURE	STRUCTURE	WEIGHTS						
A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10907	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

								MS20426AD3	E	RIVET	STD PART						
5	5	4	9	3	10	10		NAS697A-08	E	PLATE NUT	STD. PART						
1								LDW280-10907-28	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.036 x 3 x 6	NONE	88	
	1							-27						.036 x 3 x 6			
		1						-23						.036 x 3 x 7			
			1					-19						.036 x 3 x 8			
				1				-17						.036 x 3 x 3			
					1			-16						.036 x 3 x 10			
						1		-15		BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.036 x 3 x 10	NONE	88	
								-26		BRACKET ASSY					NONE	NONE	
								-25									
								-21									
								-9									
								-7									
								-6									
								LDW280-10907-5	E	BRACKET ASSY					NONE	NONE	
-26	-25	-21	-9	-7	-6	-5	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
QTY PER ASSEMBLY																	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

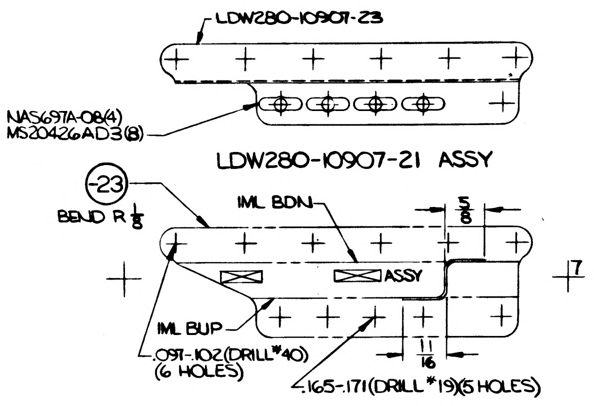
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10907	A
SCALE NONE		SHEET 2.00	

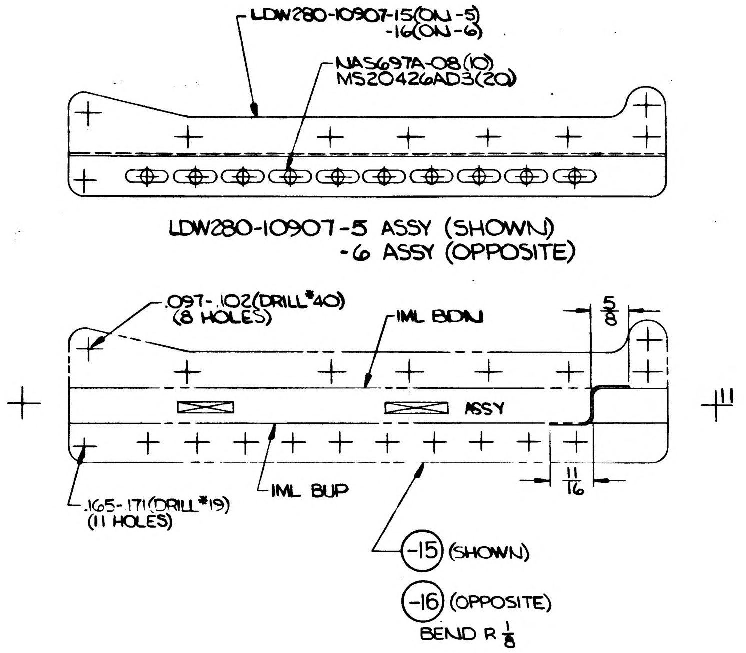
ENG 77.2 7-65

01

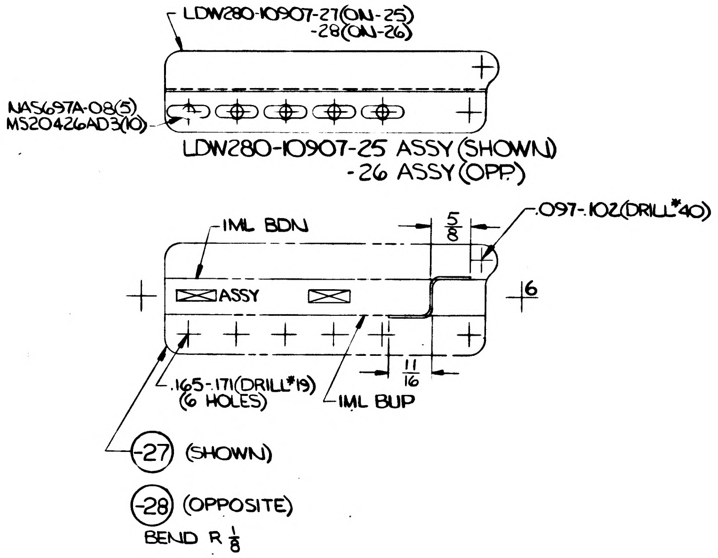
NAS 9-1100


LDW280-10907-23
NAS697A-08(4)
MS20426AD3(8)
-23
BEND R 1/8
IML BDN
5/8
ASSY
7
IML BUP
.097-.102(DRILL #40)
(6 HOLES)
11/16
.165-.171(DRILL #19)(5 HOLES)

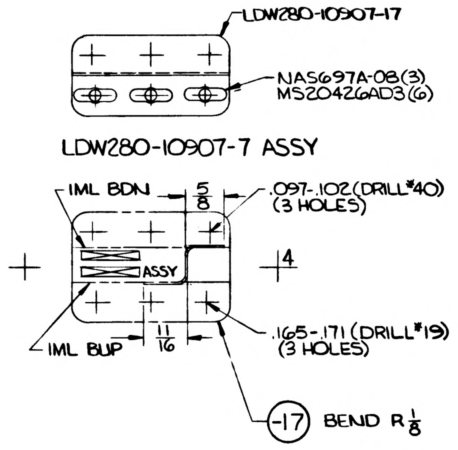
LDW280-10907-21 ASSY


LDW280-10907-15(ON -5)
-16(ON -6)
NAS697A-08(10)
MS20426AD3(20)
.097-.102(DRILL #40)
(8 HOLES)
IML BDN
5/8
ASSY
11
.165-.171(DRILL #19)
(11 HOLES)
IML BUP
11/16
-15 (SHOWN)
-16 (OPPOSITE)
BEND R 1/8

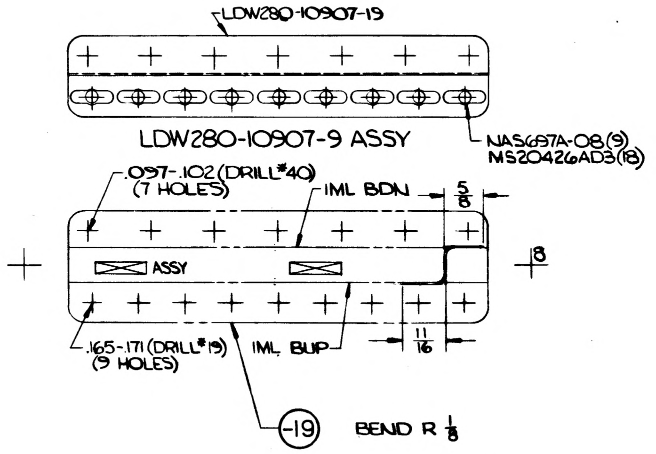
LDW280-10907-5 ASSY (SHOWN)
-6 ASSY (OPPOSITE)


LDW280-10907-27(ON-25)
-28(ON-26)
NAS697A-08(5)
MS20426AD3(10)
IML BDN
5/8
.097-.102(DRILL #40)
ASSY
6
.165-.171(DRILL #19)
(6 HOLES)
11/16
IML BUP
-27 (SHOWN)
-28 (OPPOSITE)
BEND R 1/8

LDW280-10907-25 ASSY (SHOWN)
-26 ASSY (OPP.)


LDW280-10907-17
NAS697A-08(3)
MS20426AD3(6)
IML BDN
5/8
.097-.102 (DRILL #40)
(3 HOLES)
ASSY
4
IML BUP
11/16
.165-.171 (DRILL #19)
(3 HOLES)
-17 BEND R 1/8

LDW280-10907-7 ASSY


LDW280-10907-19
NAS697A-08(9)
MS20426AD3(18)
.097-.102 (DRILL #40)
(7 HOLES)
IML BDN
5/8
ASSY
8
.165-.171 (DRILL #19)
(9 HOLES)
IML BUP
11/16
-19 BEND R 1/8

LDW280-10907-9 ASSY

35
25

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

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NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	E	26512	LDW280-10907	A
	SCALE FULL		SHEET 3.00	

2 FOR PHOTO REPRODUCTION 1

K2

LDW280-10907 A

B

ENG 32.1 REV 3-65

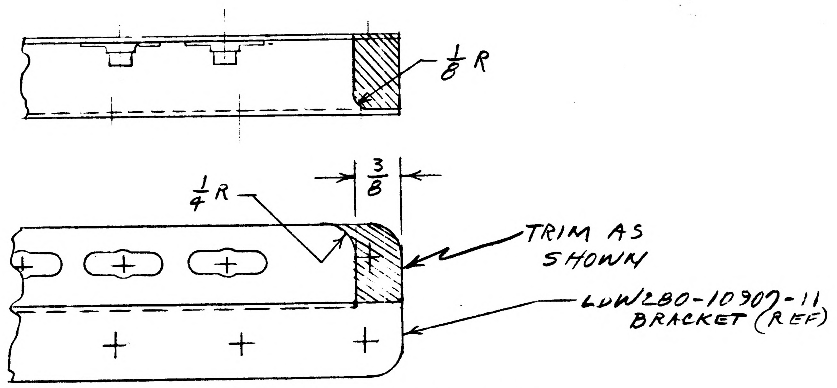
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

*

DWG NO	LDW280-10907	EO NO.	B1
CONTROL INFO NO.	LM-5-15394		

ON-11
IN FLD/DWG TRIM AS SHOWN:

RELEASED BY LIAISON



LDW280-10907-1 BRACKET ASSY

DETAIL SPEC REQ	☐	CL II ENGRG CHG	✓	CL I ENGRG CHG	☐

REASON FOR EO: CLEARANCE REQ'D FOR CABIN FLOOR INSTL.

DESCRIPTION OF EO: IN FLD/DWG ON-11 TRIMMED TOP LEG OF Z 3/8, ADDED 1/4 R & 1/8 R

GAEC EO RELEASE: C JL

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8 (18)	
		LM-1 (31)	
		LM-2 (32)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG	RECORD EO	REWORK	SCRAP
✓		-1	

APPROVED BY								
DATE	7/5/67				6-19-67	6-19-67	7/5/67	6/19/67
6-19-67	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	BRACKET ASSY ASCENT-MID SECT & Z27 EQUIP. LINES	LDW280-10907	B1

ISSUED BY LIAISON P. HUSTED, 6216 SECTION VDI GROUP NO. 335 PL 25

01 NAS 9-1100

LDW280-10908 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28308	LM-3(33)	1EA
LM	LDW280-28308	LM-2(32)	1EA
LM	LDW280-28308	LM-1(31)	1EA
LM	LDW280-28308	LTA-8(10)	1EA
PART NO. LDW280-10908-11&-13		GAEC SCH NO. 32	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -13

GRUMMAN REL INFO

PRIM NO. 215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.010

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY J. CARROLL 3/19/66

LAYOUT BY

CHECKED BY

GR LDR W. TRAUT 3/21/66

VEH DES INT W. BISCHOFF 3/21/66

STRUCTURES F.E.B-HILDERMAN 3/22/66

WEIGHTS D. ROBESCH 3/25/66

ENGR J. ALBER-RC 3/28/66

REL GROUP A. CARAMANICA 3/30/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE-MID SECT. ELECT.
-227 FWD

SIZE B

CODE IDENT NO. 26512

LDW280-10908 A

SCALE NONE

SHEET 1.00 OF 4

NG 77.1 12-65

SUPERSEDES LDW280-10908 N.C. 3/30/66

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED - NO CHANGE - LAST REV. N. C. - LOFTED DWG. WAS DIMENSIONED DWG. - ADDED SH. 1.10, 2.00, 3.00 G. KORDES 10-30-66.					RMS 11-3-66	
A	1	1.00, 1.10, 2.00, 3.00						EO A1	IN FLD & BM ADDED LDW280-10908-13 BRACKET AND NEXT ASSY LDW280-28308.	LTA-8 LM-1, LM-2	✓		RMS G. KORDES 10/30/66		
	2	1.10, 3.00						EO A2	ADDED 2 #19 HOLES ON LDW280-10908-11.	LTA-8, LM-1, LM-2	✓				
	3	1.00, 1.10						EO A3	TO -11 & -13 ADDED EFFECTIVITIES LM-3 THRU LM-15	LM-3 THRU LM-15	NOT	REQD			
	4	1.00, 1.10						EO A4	REMOVED EFFECTIVITY LM-4(3) THRU LM-15(45)	LM-4 THRU LM-15		✓			

CHG APPROVED

LTR	GROUP LDR	GR LDR	VEH. DES. INT	STRUCTURES	WEIGHTS		PROJECT	RELEASE			
A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10908	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10908-13	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 × 3 × 4	NONE	88	
		LDW280-10908-11	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 × 4 × 5	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10908	A

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

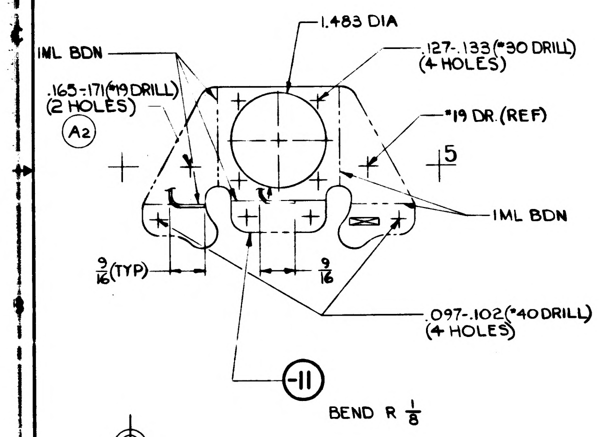
01

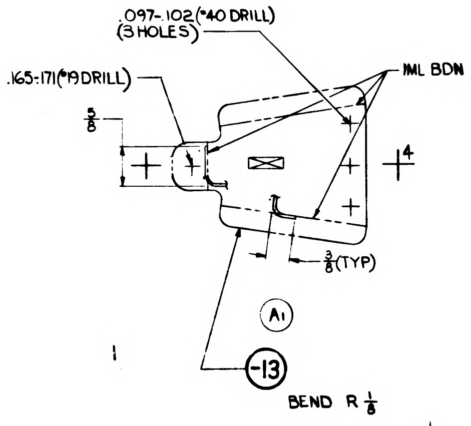
NAS 9-1100

TR 10-26-66

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.


1.483 DIA
IML BDN
.127-.133 (#30 DRILL) (4 HOLES)
.165-.171 (#19 DRILL) (2 HOLES)
A2
#19 DR. (REF)
5
IML BDN
9/16 (TYP)
9/16
.097-.102 (#40 DRILL) (4 HOLES)
-11
BEND R 1/8


.097-.102 (#40 DRILL) (3 HOLES)
.165-.171 (#19 DRILL)
IML BDN
5/8
4
3/8 (TYP)
A1
-13
BEND R 1/8

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ƒ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & [illegible] AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	C	26512	LDW280-10908	A

SCALE FULL

SHEET 3.00

FOR PHOTO REPRODUCTION

K2

LDW280-10908A

LDW280-10908A

01

NAS 9-1100

LDW280-10909 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53310	LM-3(33)	5
LM	LDW280-28310	LM-2(32)	5
LM	LDW280-28310	LM-1(31)	5
LM	LDW280-28310	LTA-8(18)	5
PART NO. LDW280-10909-19		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53310	LM-3(33)	2 EA
LM	LDW280-28310	LM-2(32)	2 EA
LM	LDW280-28310	LM-1(31)	2 EA
LM	LDW280-28310	LTA-8(18)	2 EA
PART NO. LDW280-10909-5 & 7		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53310	LM-3(33)	1 EA
LM	LDW280-28310	LM-2(32)	1 EA
LM	LDW280-28310	LM-1(31)	1 EA
LM	LDW280-28310	LTA-8(18	1 EA
PART NO. LDW280-10909-1,-2,-3 & -4		GAEC SCH NO. 31-2	

WORK PKG FUNCTION NO. 110 -3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A		
LAST DASH NO. USED	-19	PRIM NO. 215	JK/001 mP-5	A-5/31/7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM
DOCUMENTATION TYPE II

DRAWN BY	E.HARRIGAN 3/19/66	RELIABILITY	
LAYOUT BY			
CHECKED BY			
GR.LEADER	W.TRAUT 3/22/66		
VEH DES INT	W.BISCHOFF		
STRUCTURES	R.HILDERMAN 3/23/66	PROJ ENGR	J.ALBER 3/28/66
STRUCTURES	FEB BW 3/23/66	REL GROUP	A.CARAMANICA
WEIGHTS	DJL/D.ROBESCH 3/25		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET ASSEMBLY
ASCENT STAGE~MID SECT~ +Z27
EQUIP LINES

SIZE B | CODE IDENT NO. 26512 | LDW280-10909 | A
SCALE NONE | SHEET 1.00 OF 4

THIS DWG SUPERSEDES LDW280-10909 "NO CHANGE" 3-28-66.

NG 77.1 12-65

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED ~ NO CHANGE ~ LAST REV NO CHANGE ADDED SH 1.10, 2.00 & 3.00 LOFTED DWG WAS DIMENSIONED	HERB. SCHWETER 5-19-67.					
A	1	1.00 1.10						EO A1	ON -1, -2, -3, -4, -5, -7 & -19 ADDED EFF LM-3 THRU LM-15	LM-3 THRU LM-15	NOT	REQD	HERB. SCHWETER 5-19-67	X	X
	2							LE0280-264	FOR -1, -2, -3 & -4 REMOVED EFF LM-4(34) THRU LM-15(45)	LM-4 THRU LM-15		-1, -2, -3 -4			
	3							EO A3	ON-5 CHANGED NO. REQ'D TO (2) WAS (3) N/A LDW280-54310 ON-7 N/A LDW280-54310 WAS LDW280-54310 ON-19 CHANGED NO. REQ'D TO (5) WAS (6) N/A LDW280-54310			-5 -7 -19			
	4							LE0280-265	FOR -5 CHANGED N/A TO LDW280-54310 WAS LDW280-53310		NOT	REQD			
	5						✓	LE0280-491	REMOVED LM-4(34) THRU LM-15(45) REQ'TS.			-5, -7 -19	B.		

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10909	A
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

-7	-5	-4	-3	-2	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
6	4	12	12	7	7		NAS697A-08	E	NUT PLATE	STD PART						
							MS20426AD3		RIVET	STD PART						
							LDW280-10909-19		BRACKET	AL ALY SH	QQ-A-250/4	2024-T3	.036 × 2 × 3	NONE	88	
1							-17						.036 × 3 × 5			
	1						-15						.036 × 3 × 4			
		1					-14						.036 × 3 × 10			
			1				-13						.036 × 3 × 10			
				1			-12						.036 × 3 × 7			
					1		LDW280-10909-11		BRACKET	AL AL SH	QQ-A-250/4	2024-T3	.036 × 3 × 7	NONE	88	
							LDW280-10909-7		BRACKET ASSY					NONE	NONE	
							-5									
							-4									
							-3									
							-2									
							LDW280-10909-1	E	BRACKET ASSY					NONE	NONE	

QTY PER ASSEMBLY

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

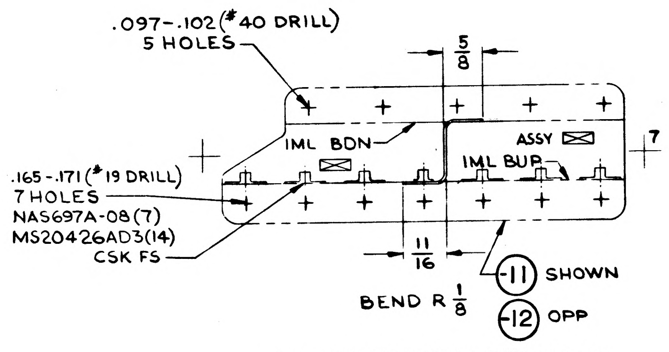
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10909	A

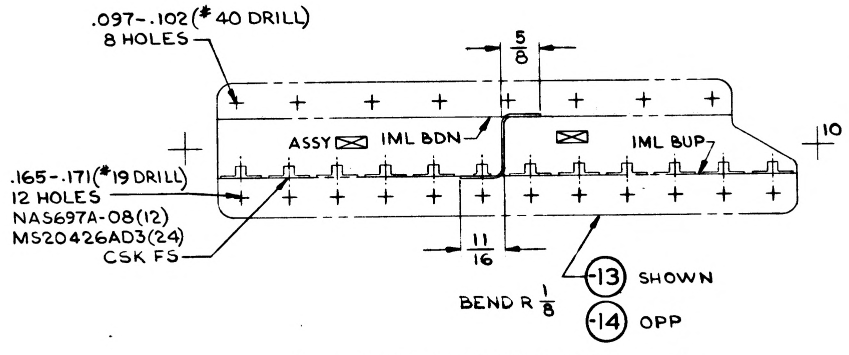
SCALE NONE SHEET 2.00

ENG 77.2 7-65

01 NAS 9-1100

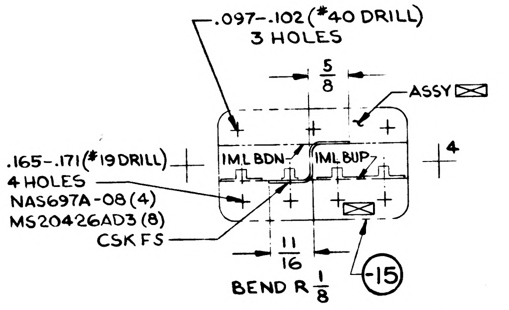

.097-.102 (#40 DRILL)
5 HOLES
5/8
IML BDN
ASSY ☒
IML BUP
7
.165-.171 (#19 DRILL)
7 HOLES
NAS697A-08(7)
MS20426AD3(14)
CSK FS
11/16
-11 SHOWN
BEND R 1/8
-12 OPP

LDW280-10909-1 ASSY SHOWN
-2 ASSY OPP

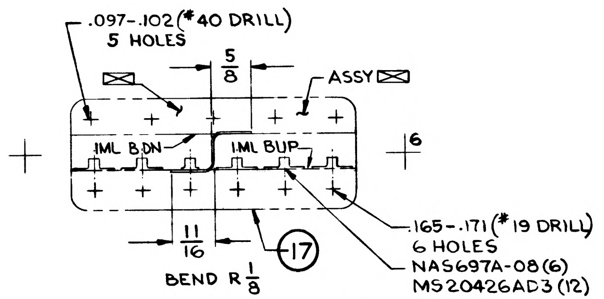

.097-.102 (#40 DRILL)
8 HOLES
5/8
ASSY ☒
IML BDN
IML BUP
10
.165-.171 (#19 DRILL)
12 HOLES
NAS697A-08(12)
MS20426AD3(24)
CSK FS
11/16
BEND R 1/8
-13 SHOWN
-14 OPP

LDW280-10909-3 ASSY SHOWN
-4 ASSY OPP

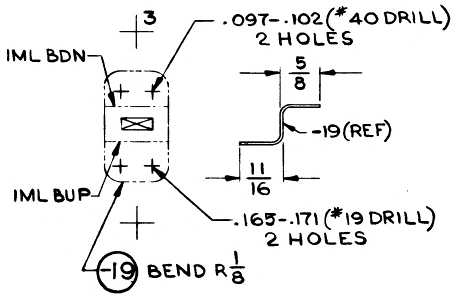
NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS.


.097-.102 (#40 DRILL)
3 HOLES
5/8
ASSY ☒
IML BDN
IML BUP
4
.165-.171 (#19 DRILL)
4 HOLES
NAS697A-08(4)
MS20426AD3(8)
CSK FS
11/16
BEND R 1/8
-15

LDW280-10909-5 ASSY


.097-.102 (#40 DRILL)
5 HOLES
☒
5/8
ASSY ☒
IML BDN
IML BUP
6
11/16
BEND R 1/8
-17
.165-.171 (#19 DRILL)
6 HOLES
NAS697A-08(6)
MS20426AD3(12)
CSK FS

LDW280-10909-7 ASSY


3
.097-.102 (#40 DRILL)
2 HOLES
IML BDN
5/8
-19 (REF)
11/16
IML BUP
.165-.171 (#19 DRILL)
2 HOLES
-19 BEND R 1/8

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE EDGE DISTANCE IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
LM	SIZE F	CODE IDENT NO. 26512	LDW280-10909	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

NAS 9-1100

LDW28010910 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53310	LM-3(33)	1 EA
LM	LDW280-28310	LM-2(32)	1 EA
LM	LDW280-28310	LM-1(31)	1 EA
LM	LDW280-28310	LTA-8(18	1 EA

MODEL OR END ITEM | NEXT ASSY | MODULE OR SER NO. | REQD PER MODULE OR END ITEM
PART NO. LDW28010910-1,-3&-15
GAEC SCH NO. 31-2

MODEL OR END ITEM | NEXT ASSY | MODULE OR SER NO. | REQD PER MODULE OR END ITEM
PART NO.
GAEC SCH NO.

MODEL OR END ITEM | NEXT ASSY | MODULE OR SER NO. | REQD PER MODULE OR END ITEM
PART NO.
GAEC SCH NO.

WORK PKG FUNCTION No. 110 3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED
LAST DASH NO. USED -15
GRUMMAN REL INFO A
PRIM NO. 215 | VK(001) | MP-8A | 9/8/

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.030 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM
DOCUMENTATION TYPE II

DRAWN BY	HARRIGAN 3/19/66	WEIGHTS	ROBESCH 3/25/66
LAYOUT BY			
CHECKED BY			
VDI	BISCHOFF		
GR LEADER	W.TRAUT 3/22/66		
STRUCTURE	F.E.B. B.W. 3/23/66	PROJ ENGR	J.ALBER/Rc 3/28/66
STRUCTURE	HILDERMAN 3/23/66	REL GROUP	CARAMANICA 3/30/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET ASSY
ASCENT-MID SECT
+Z27 EQUIP. LINES

SIZE B | CODE IDENT NO. 26512 | LDW28010910 | A | (A)
SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-10910 NO CHANGE 3-30-66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
									RETRACED NO CHG-LAST REV NC-LOFTED DWG WAS DE DIMENSIONED. ADDED SH. 1.10, 2.00 & 3.00-CAPONE 8-23-67						
A	1	1.00 1.10						EOA1	TO-1,-3 & -15 ADDED EFF OF LM-3 THRU LM-15	LM-3 THRU LM-15	NOT	REQD	CAPONE 8-23-67		
	2	1.00 1.10						LE0280-264	FOR -1 & -3 REMOVE EFF LM-4 THRU LM-15	LM-4 THRU LM-15		✓			
	3	1.00					✓	LE0280-491	FOR-15 REMOVED LM-4 THRU LM-15 REQUIREMENTS			✓			

	LTR	GROUP LDR	VDI	STRUCT	STRUCT	WEIGHTS
CHG APPROVED	A		8/29/67			

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10910	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY -3	QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
			MS20426AD3	E	RIVET	STD PART						
9	11		NAS697A-08	E	NUT PLATE	STD PART						
			LDW280-10910-15	E	BRACKET	AL ALY SH	QQ-A-250/4	2024-T3	.036 x 2 x 3	NONE	88	
1			LDW280-10910-13	E	BRACKET	AL ALY SH	QQ-A-250/4	2024-T3	.036 x 3 x 12	NONE	88	
	1		LDW280-10910-11	E	BRACKET	AL ALY SH	QQ-A-250/4	2024-T3	.036 x 3 x 9	NONE	88	
			LDW280-10910-3	E	BRACKET ASSY							
			LDW280-10910-1	E	BRACKET ASSY							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B

CODE IDENT NO. 26512

LDW28010910

A (A)

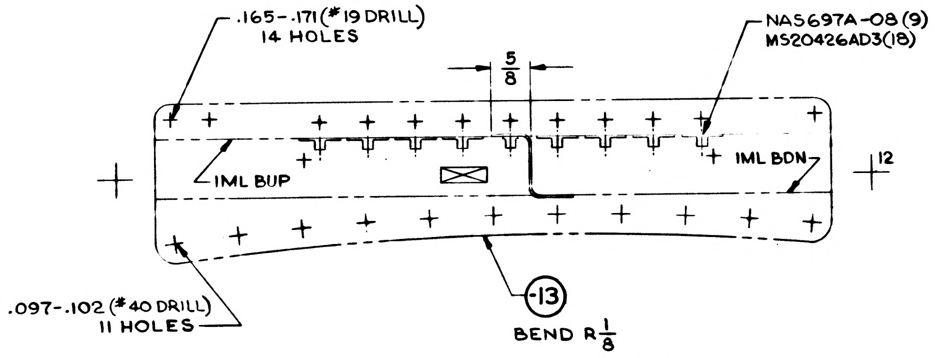
SCALE NONE

SHEET 2.00

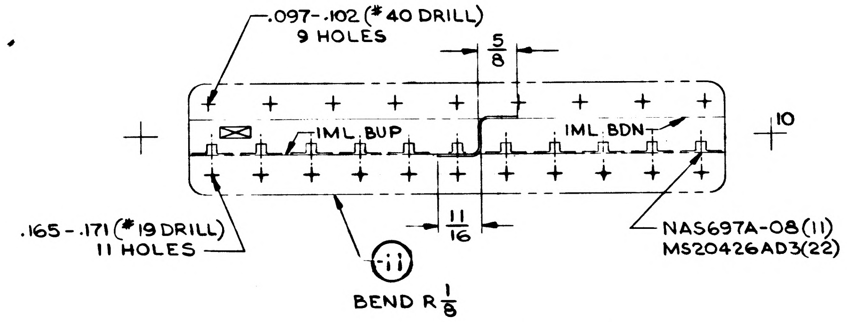
ENG 77.2 7-65

01

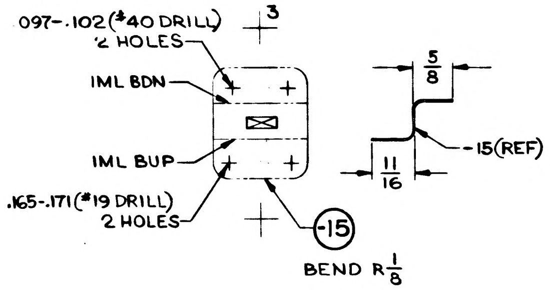
NAS 9-1100

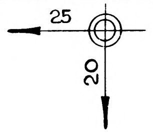

.165-.171(#19 DRILL)
14 HOLES
5/8
NAS697A-08(9)
MS20426AD3(18)
IML BUP
IML BDN
12
.097-.102(#40 DRILL)
11 HOLES
-13
BEND R 1/8

LDW280-10910-3ASSY


.097-.102(#40 DRILL)
9 HOLES
5/8
IML BUP
IML BDN
10
.165-.171(#19 DRILL)
11 HOLES
11/16
NAS697A-08(11)
MS20426AD3(22)
-11
BEND R 1/8

LDW280-10910-1ASSY


.097-.102(#40 DRILL)
2 HOLES
3
IML BDN
IML BUP
.165-.171(#19 DRILL)
2 HOLES
5/8
11/16
-15(REF)
-15
BEND R 1/8



NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	√

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	D	26512	LDW280-10910	A
	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

01 NAS 9-1100

LDW280-10911 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
L M	LDW280-23313	LM-15(45)	3
		LM-14(44)	3
		LM-13(43)	3
		LM-12(42)	3
		LM-11(41)	3
		LM-10(40)	3
		LM-9(39)	3
		LM-8(38)	3
		LM-7(37)	3
		LM-6(36)	3
		LM-5(35)	3
		LM-4(34)	3
	LDW280-23313	LM-3(33)	3
	LDW280-28313	LM-2(32)	3
	LDW280-28313	LM-1(31)	3
	LDW280-28313	LTA-8(18)	3
LM	LDW280-23313	LTA-3(13)	3

PART NO.		GAEC SCH NO.	
LDW280-10911-1		32-6	

WORK PKG FUNCTION NO. 110 3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A	
LAST DASH NO. USED	-11	PRIM NO. 233	JK(001) MP-5 A-5/31/

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.01 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM
DOCUMENTATION TYPE II

DRAWN BY	R. D'MARCO 3-21-66		
LAYOUT BY	R. D'MARCO-3-21-66		
CHECKED BY			
GR LDR	W. TRAUT 3-21-66		
VDI	W. BISCHOFF 3-21		
STRUCT	HILDERMAN 3-22	PROJ ENGR	J. ALBER 3-30-66
WTS	ROBESCH 3-30	REL GROUP	BOTTI 4-2-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET ASSY
ASCENT STAGE
MIDSECT-EQUIP LINES-X233.5

SIZE B
CODE IDENT NO. 26512
LDW280-10911 A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-10911 "NO CHG" 4-2-66

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE LAST REV NO CHANGE ADDED SH 1.10, 2 & 3 R. ROSARIO 5-18-67						
A	1	1.00						EO A1	INCREASED EFFECTIVITY FOR -1 ASSYS ADDED N/A REQMT LDW280-23313	LTA-3, LM-3 THRU LM-6	✓		R. ROSARIO 5-18-67		
	2	1.00						EO A2	(FOR -1), ADDED LM-7(37) THRU LM-15(45) EFF, N/A-LDW280-23313, 3 REQD PER MOD.	LM-7(37) THRU LM-15(45)	NOT	REQD			

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10911	A
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
7		NAS697A0-8	E	NUT, PLATE	STD PART						
		MS20426AD-3		RIVET	STD PART						
1		LDW280-10911-11		BRACKET	AL ALY SH	QQ-A-250/4	2024-T3	.040 X 2 X 7	NONE	88	
		LDW280-10911-1	E	BRKT ASSY					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

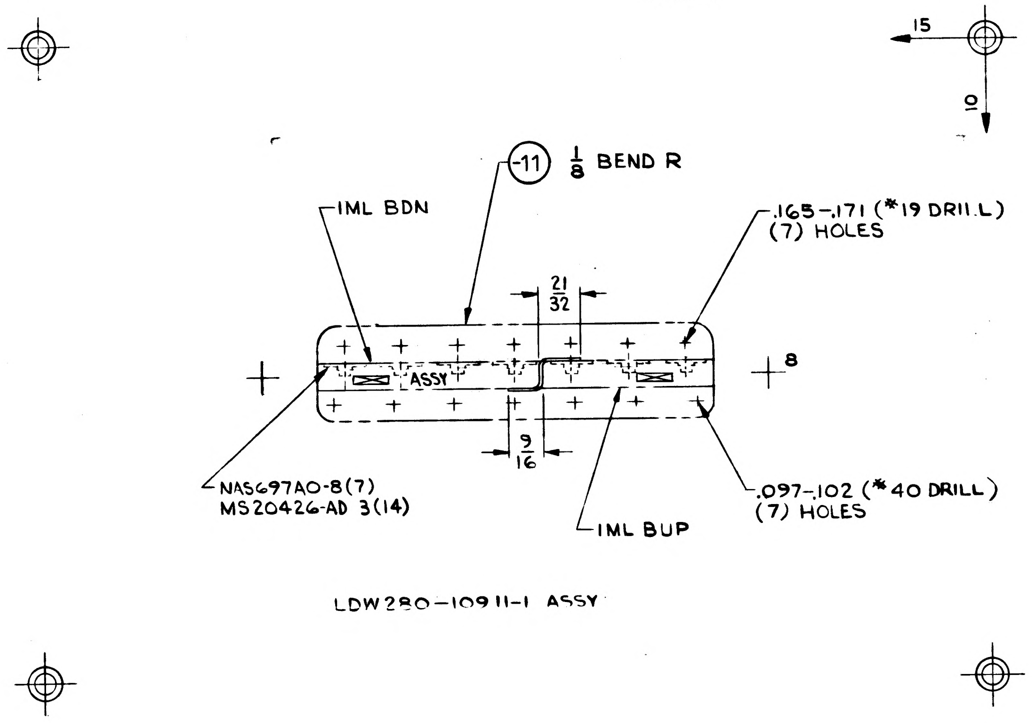
SIZE	CODE IDENT NO.		
B	26512	LDW280-10911	A
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED PARTS



MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-10911

LDW280-10911

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	C	26512	LDW280-10911	A
	SCALE FULL			SHEET 3.00

FOR PHOTO REPRODUCTION

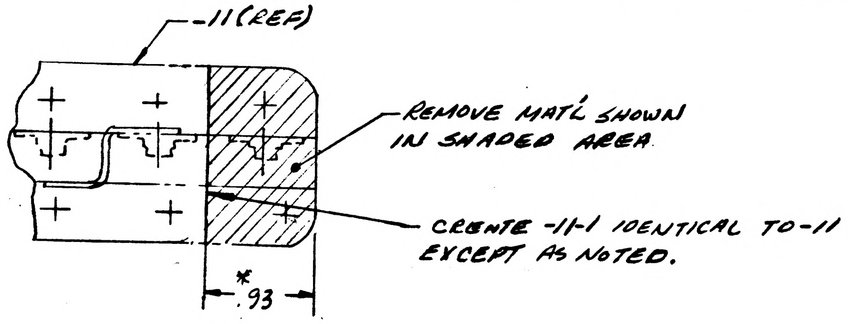
01 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW280-10911
EO NO. B1
CONTROL INFO NO. LM-2-6051


-11 (REF)
REMOVE MAT'L SHOWN IN SHADED AREA
CREATE -11-1 IDENTICAL TO -11 EXCEPT AS NOTED.
* .93

CREATE -1-1 (2) ASSY IDENTICAL TO -1
EXCEPT LDW280-10911-11-1 REPLACES
LDW280-10911-11. ~ N/A LDW. 90-23313

-1 ASSY / 1 REQD / MOD WAS -1 ASSY / 3 REQD / MOD

* DO NOT INC ON DWG. EO REF ONLY

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCO 3994 PKG # 02

REASON FOR EO: TO AVOID INTERFERENCE WITH LDW340-60181 CONTAINER INSTL

DESCRIPTION OF EO: CREATED -1-1
-1 ASSY / 1 REQ'D / MOD WAS -1 ASSY / 3 REQ'D / MOD.

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-10 (40)	THRU
		LM-14 (44)	

EFFECTIVITY M LB

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
REVISE DWG	RECORD EO	REWORK	SCRAP	DATE								GAEC EO RELEASE
✓		✓ -11		2-24-70	3-9-70 VDI	SUPPORT	RELIAB. GROUP	3/4/70 GROUP LEADER	K.C. 3/2/70 STRESS GROUP	K.C. 3/2/70 LIAISON ENGRG	3/5/70 PROJ ENGRG	3/11/70

PRIORITY: C
DRAWING TITLE: BRACKET ASSY A/S MID-SECT-EQUIP LINES-X 233.5
DRAWING NO.: LDW280-10911
EO NO.: B1

ISSUED BY LIAISON S. GRECO X3604 SECTION V.D.I GROUP NO. 335 PL 25

0 1 NAS 9-1100

LDW280-10912 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28319	TM-2A/R (60)	1 EA
LM	LDW280-28319	LM-2(32)	1 EA
LM	LDW280-28319	LM-1(31)	1 EA
LM	LDW280-28319	LTA-8(18)	1 EA
PART NO. LDW280-10912-17,-19,&-21		GAEC SCH NO. 32	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28319	LM-2(32)	1 EA
LM	LDW280-28319	LM-1(31)	1 EA
LM	LDW280-28319	LTA-8(18)	1 EA
PART NO. LDW280-10912-11,-13,&-15		GAEC SCH NO. 32	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	B	B	B		B				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	—	GRUMMAN REL INFO B			
LAST DASH NO. USED	-21	PRIM NO. 215			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.010 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM I
DOCUMENTATION TYPE II

DRAWN BY	R.D.MARCO 3-30-66		
LAYOUT BY	R.D. MARCO 3-30-66		
CHECKED BY			
GR LDR	W.TRAUT 3-31-66		
VEH.DES.INT	L. PAULSRUD 3-31-66		
STRUCTURES	J.V.-FE B-HILDERMAN 4-1-66	PROJ ENGR	J. ALBER/RMC 4-5-66
WEIGHTS	D. ROBESCH 4-5-66	REL GROUP	A.CARANANICA 4-6-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT
ASCENT STAGE- MID SECTION-Z27WIRING

SIZE	CODE IDENT NO.		
B	26512	LDW280-10912	B
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 12-65

SUPERSEDES LDW280-10912-NO CHG-4-6-66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED-NO CHG-LAST REV NO CHG-ADDED SH 1.10, 2.00, & 3.00 - G. KORDES - 11/29/66.					RMC 12-8-66	
A	1	1,1.10,3						EO A1	IN FIELD FOR -11, -13, & -15, 1½ WAS 1.	LTA-8, LM-1, LM-2	✓		KORDES 11-29-66		
	2	1.10,3						EO A2	IN FIELD FOR -11 & -15 REVISED HOLE PATTERN.						
	3	1,1.10,2,3						EO A3	IN FLD REVISED LENGTH OF -17 17 13/16 WAS 18½, ADDED -21						
	4	1.10,3						EO A4	IN FLD (ON-19) DRILL #19 (4) WAS (3)						
	5	1.10,3					✓	EO A5	ADDED E19 2 HOLES EACH IN -11, -13, -15, & -17 ADDED EC-11 1 HOLE IN -11 & -15 AND ADDED EC-11 2 HOLES IN -13.						
B	1	1,1.10,3						EO B1	IN -19 RELOCATED #19 HOLE (NOT APPLICABLE)						
	2	1,1.10					✓	EO B2	ADDED TM-2A/R EFFECTIVITY TO -17, -19, & -21	TM-2A/R (60)	NOT	REQ'D			

CHG APPROVED

LTR	GROUP LDR	VEH.DES.INT.	STRUCTURES	WEIGHTS
A				
B				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10912	B
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10912-21	E	CLIP	AL. ALLOY SH.	QQ-A-250/4	2024-T3	.050 × 1 × 5	NONE	88	
		LDW280-10912-19	E	SUPPORT	AL. ALLOY SH.	QQ-A-250/4	2024-T3	.040 × 4 × 36	NONE	88	
		LDW280-10912-17	E	SUPPORT	AL. ALLOY SH.	QQ-A-250/4	2024-T3	.040 × 4 × 19	NONE	88	
		LDW280-10912-15	E	SUPPORT	AL. ALLOY SH.	QQ-A-250/4	2024	.040 × 4 × 16	T3/T42	88	
		LDW280-10912-13	E	SUPPORT	AL. ALLOY SH.	QQ-A-250/4	2024	.040 × 4 × 16	T3/T42	88	
		LDW280-10912-11	E	SUPPORT	AL. ALLOY SH.	QQ-A-250/4	2024	.040 × 4 × 16	T3/T42	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T3	AL. HEAT TREAT.	MIL-H-6088

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10912	B

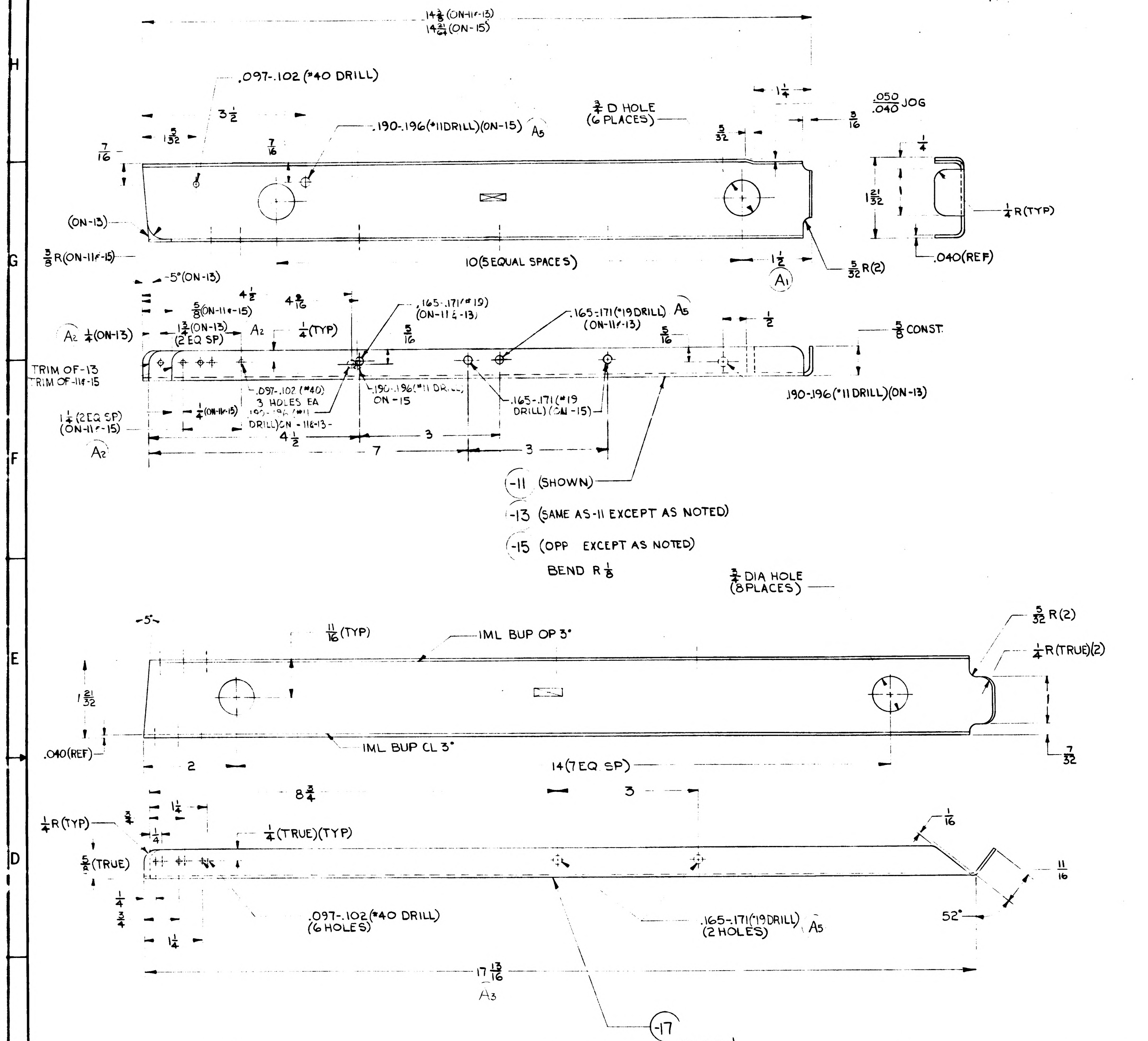
SCALE NONE

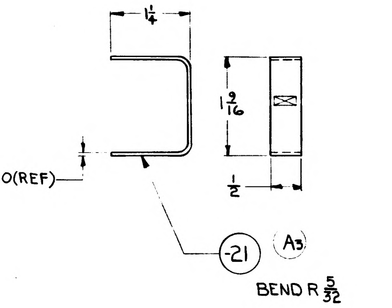
SHEET 2.00

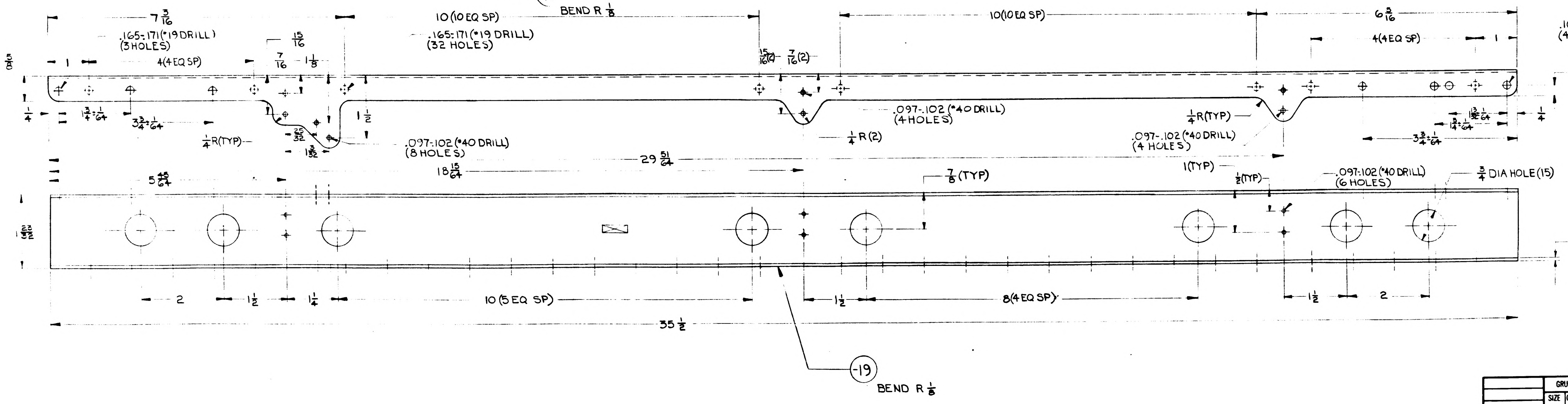
ENG 77.2 7-65

01

NAS 9-1100


14 1/8 (ON-11-13)
14 21/64 (ON-15)
.097-.102 (#40 DRILL)
3 1/2
1 5/32
.190-.196 (#11DRILL)(ON-15)
A5
3/4 D HOLE (6 PLACES)
1 1/4
.050/.040 JOG
5/32
3/16
1/4
1 21/32
1/4 R(TYP)
(ON-13)
3/8 R(ON-11&-15)
10(5 EQUAL SPACES)
1 1/2
A1
5/32 R(2)
.040(REF)
5°(ON-13)
5/8(ON-11&-15)
1 3/8(ON-13) (2 EQ SP)
A2
1/4(TYP)
.165-.171(#19) (ON-11&-13)
.165-.171(#19 DRILL) (ON-11&-13)
1/2
5/8 CONST.
A2 1/4(ON-13)
TRIM OF-13
TRIM OF-11&-15
.097-.102 (#40) 3 HOLES EA
.190-.196(#11 DRILL) ON-15
.165-.171(#19 DRILL)(ON-15)
.190-.196(#11 DRILL)(ON-13)
1 1/4 (2 EQ SP) (ON-11&-15)
4 1/2
7
3
-11 (SHOWN)
-13 (SAME AS-11 EXCEPT AS NOTED)
-15 (OPP EXCEPT AS NOTED)
BEND R 1/8
3/4 DIA HOLE (8 PLACES)
5/32 R(2)
1/4 R(TRUE)(2)
11/16(TYP)
IML BUP OP 3°
1 21/32
.040(REF)
IML BUP CL 3°
7/32
2
14(7 EQ SP)
8 3/4
3
1/4 R(TYP)
1/4(TRUE)(TYP)
1/16
11/16
5/8(TRUE)
.097-.102 (#40 DRILL) (6 HOLES)
.165-.171(#19 DRILL) (2 HOLES)
A5
52°
17 13/16
A3
-17
BEND R 1/8


1 1/4
1 9/16
.050(REF)
1/2
-21
A3
BEND R 5/32


7 3/16
10(10 EQ SP)
10(10 EQ SP)
6 3/16
.165-.171(#19 DRILL) (3 HOLES)
.165-.171(#19 DRILL) (32 HOLES)
.165-.171(#19 DRILL) (4 HOLES)
A4
4(4 EQ SP)
15/16
7/16
1 1/8
7/16(2)
1/4(TYP)
1 1/2
1/4 R(TYP)
.097-.102 (#40 DRILL) (8 HOLES)
.097-.102 (#40 DRILL) (4 HOLES)
1/4 R(2)
29 51/64
18 15/64
5 45/64
1(TYP)
1/2(TYP)
.097-.102 (#40 DRILL) (6 HOLES)
3/4 DIA HOLE(15)
7/8(TYP)
1 23/32
.040(REF)
2
1 1/2
1 1/4
10(5 EQ SP)
8(4 EQ SP)
35 1/2
-19
BEND R 1/8

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN TO .0005 MAX MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD 10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

01 NAS 9-1100

LDW280-10912 B

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LM	E	26512	LDW280-10912
	SCALE FULL		SHEET

LDW280-10913

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28319	LM-2(32)	2
LM	LDW280-28319	LM-1(31)	2
LM	LDW280-28319	LTA-8(18)	2
PART NO. LDW280-10913-19		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28319	LM-2(32)	1EA
LM	LDW280-28319	LM-1(31)	1EA
LM	LDW280-28319	LTA-8(18)	1EA
PART NO. LDW280-10913-11, -13, -15 & -17		GAEC SCH NO. 32-5	

WORK PKG FUNCTION NO. 110

LINE ITEM I

DOCUMENTATION TYPE II

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO
LAST DASH NO. USED	-19	PRIM NO. 215 JK(001) mP-14-6/17/7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.010 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

DRAWN BY	R.DiMARCO 3-30-66
LAYOUT BY	R.DiMARCO 3-30-66
CHECKED BY	
GP. LEADER	W.TRAUT 3-31-66
VEH.DES.INT.	J.PUSATERI 3-31-66
STRUCT.	R.HILDERMAN 4-1-66
STRUCT.	
WEIGHTS	D.ROBESCH 4-5-66
PROJ ENGR	J.ALBER-4-5-66
REL GROUP	CARAMANICA 4-6-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT
ASCENT STAGE
MID-SECT. -Z27 WIRING LWR

SIZE	CODE IDENT NO.	
B	26512	LDW280-10913
SCALE	NONE	SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHG. LAST REV. N.C. C.D'AVELLA 5-17-67 ADDED SHEET 1.10, 2.00 & 3.00.						

CHG APPROVED

LTR	GROUP LDR	VEH.DES.INT.	STRUCT.	STRUCT.	WEIGHTS						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10913

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10913-19	F	FILLER	AL ALLOY SH	QQ-A-355	2024T-3	.063X 3X3	NONE	76	3G
		-17		FILLER			2024T-3	.063X 2X3	NONE	76	5D
		-15		FILLER			2024T-3	.063X 2 X 2	NONE	76	6B
		-13		SUPPORT			2024	.040X 4 X 7	T3/T42	88	7D
		LDW280-10913-11	E	SUPPORT	AL ALLOY SH	QQ-A-355	2024	.040X 4 X 7	T3/T42	88	6H

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030
76	ALODINE	LSP14-9010
T3	AL HEAT TREAT	MIL-H-6088

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

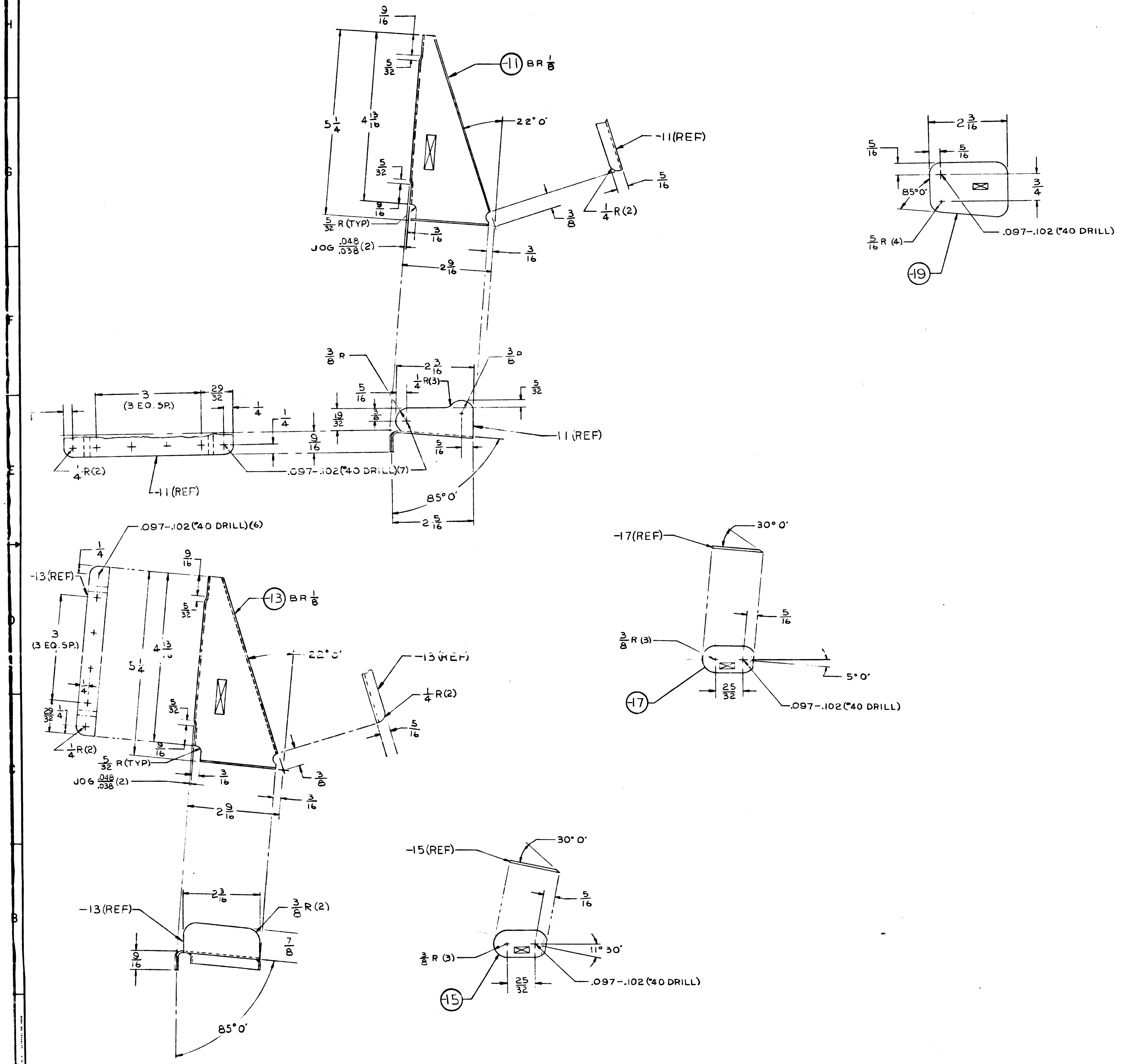
SIZE B
CODE IDENT NO. 26512
LDW280-10913
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01 NAS 9-1100

NOTES.

1. NO TOOLING HOLES PERMITTED IN PARTS.



9/16
5/32
(-11) BR 1/8
5 1/4
4 13/16
22° 0'
-11(REF)
5/16
1/4 R(2)
3/8
5/32 R (TYP)
JOG .048/.038 (2)
3/16
2 9/16
(-19)
2 3/16
5/16
3/4
85°0'
5/16 R (4)
.097-.102 (#40 DRILL)
3/8 R
3/8 R
2 3/16
1/4 R(3)
5/32
3 (3 EQ. SP.)
29/32
1/4
19/32
3/8
9/16
1/4 R(2)
-11 (REF)
.097-.102 (#40 DRILL)(7)
85° 0'
2 5/16
.097-.102 (#40 DRILL)(6)
-13(REF)
(-13) BR 1/8
-13 (REF)
1/4 R(2)
JOG .048/.038 (2)
-17(REF)
30° 0'
3/8 R (3)
5° 0'
25/32
(-17)
-13 (REF)
3/8 R (2)
7/8
-15(REF)
30° 0'
11° 30'
(-15)

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015 .031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LM	E	26512	LDW280-10913

SCALE

SHEET 3.05

LDW280-10913

LDW280-10914 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28323	LM-2(32)	2
LM	LDW280-28323	LM-1(31)	2
LM	LDW280-28323	LTA-8(18)	2

PART NO. LDW280-10914-15 & -17

GAEC SCH NO. 32.5

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28323	LM-2(32)	1 EA
LM	LDW280-28323	LM-1(31)	1 EA
LM	LDW280-28323	LTA-8(18)	1 EA

PART NO. LDW280-10914-11,-13,-14, -18,-19,-21 & -23

GAEC SCH NO. 32.5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -23

GRUMMAN REC INFO A

PRIM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY	E.HARRIGAN 3-29	RELIABILITY	
LAYOUT BY			
CHECKED BY			
GRP LEADER	W. TRAUT 3-29		
VEH DES INT	PAULSRUD 3-31		
STRUCTURES	FEB 4-2	PROJ ENGR	J. ALBER 4-5
STRUCTURES	HILDERMAN 4-2	REL GROUP	A. CARAMANICA 4-7
WEIGHTS	D. ROBESCH 4-5		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT
ASCENT STAGE ~ MID-SECT. ~
~ Z27 & X240 WIRING

SIZE B

CODE IDENT NO. 26512

LDW280-10914 A

SCALE NONE

SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-10914 NO CHG 12-1-66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHG LAST REVISION N.C. S.AUGELLO 12-1-66 LOFTED DWG WAS DIM ADDED SH 1.10, 2.00 & 3.00				RMS S. AUGELLO 12-1-66	[illegible]	
A	1	1.00, 1.10, 2.00, 3.00						EO A1	IN FLD, B/M & MOD/BLK ADDED -21 & -23	LTA-8, LM-1-2	✓				
	2	1.10, 3.00						EO A2	IN FLD (ON -13 & -14) REVISED HOLE PATTERN GB						

CHG APPROVED

LTR	GROUP LDR	VEH DES IN	STRUCTURES	STRUCTURES	WEIGHTS
A	—	12/19/66	BW 12-20	FES 12/20	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10914	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10914-23	E	FILLER	AL ALLOY SH	QQ-A-250/4	2024-T3	.063 x 2 x 2	NONE	76	
								LDW280-10914-21	E	FILLER	AL ALLOY SH	QQ-A-250/4	2024-T3	.063 x 2x5	NONE	76	
								LDW280-10914-19	E	FRAME	AL ALLOY SH	QQ-A-250/4	2024	.040 x 2 x 9	T3-T42	88	
								LDW280-10914-18	E	CHANNEL	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 x 3 x 11	NONE	88	
								LDW280-10914-17	E	CHANNEL	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 x 3 x 11	NONE	88	
								LDW280-10914-15	E	PLATE	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 x 2 x 3	NONE	88	
								LDW280-10914-14	E	ZEE	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 x 4 x 5	NONE	88	
								LDW280-10914-13	E	ZEE	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 x 4-5	NONE	88	
								LDW280-10914-11	E	BEAM	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 x 5 X 38	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						76	ALODINE	LSP14-9010
						88	ANODIZE	LSP14-9030
						T42	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10914	A

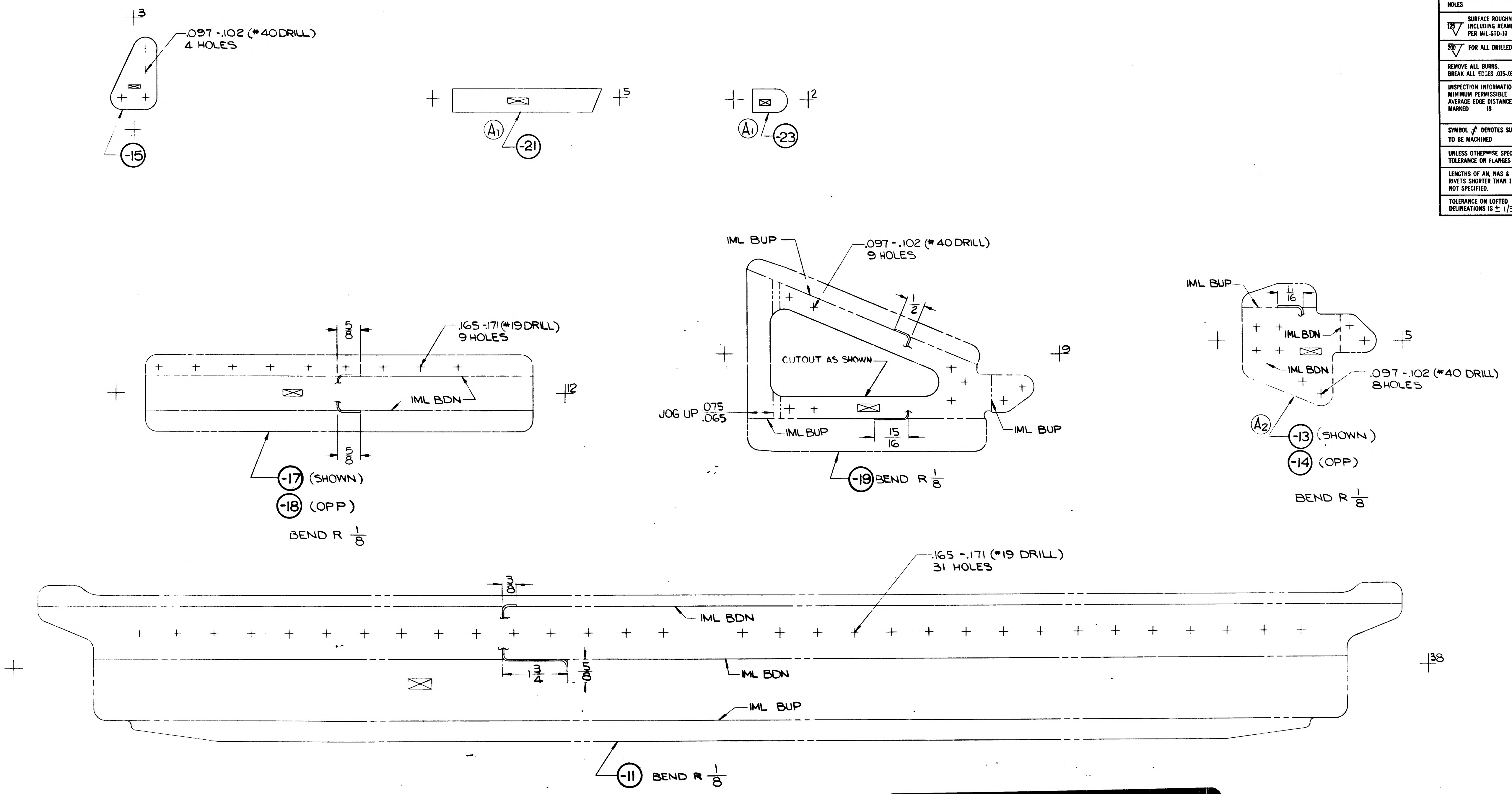
SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	√
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	√


.097 -.102 (#40 DRILL)
4 HOLES
3
-15
5
A1
-21
2
-23
IML BUP
.097 - .102 (#40 DRILL)
9 HOLES
1/2
CUTOUT AS SHOWN
9
JOG UP .075/.065
IML BUP
15/16
IML BUP
-19 BEND R 1/8
5/8
.165 -.171 (#19 DRILL)
9 HOLES
IML BDN
12
-17 (SHOWN)
-18 (OPP)
BEND R 1/8
IML BUP
1/16
IML BDN
IML BDN
.097 -.102 (#40 DRILL)
8 HOLES
5
A2
-13 (SHOWN)
-14 (OPP)
BEND R 1/8
.165 -.171 (#19 DRILL)
31 HOLES
3/8
IML BDN
1 3/4
5/8
IML BDN
IML BUP
38
-11 BEND R 1/8
35
30

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
E	26512	LDW280-10914	A

LM
MODEL OR END ITEM
SCALE FULL
SHEET 3.00

LDW280-10914 A

LDW280-10914 A

2 FOR PHOTO REPRODUCTION 1

LDW280-10915 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28323	LM-2(32)	4
LM	LDW280-28323	LM-1(31)	4
LM	LDW280-28323	LTA-8(18)	4
PART NO. LDW280-10915-13		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28323	LM-2(32)	1EA
LM	LDW280-28323	LM-1(31)	1EA
LM	LDW280-28323	LTA-8(18)	1EA
PART NO. LDW280-10915-11,-15,-17,-18,-19		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

WORK PKG FUNCTION NO. 110 5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED —
LAST DASH NO. USED -19
GRUMMAN REL INFO
PRIM NO. 215 JK(001) MP-5A 6/29/7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.010 ±0°30'
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM
DOCUMENTATION TYPE II

DRAWN BY	E. HARRIGAN 3/29		
LAYOUT BY			
CHECKED BY			
GR LEADER	W. TRAUT 3/29/66		
VEH DES INT	PAULSRUD 3/31		
STRUCTURE	J.V. F.E.B. 4/2	PROJ ENGR	J. ALBER 4/5/66
STRUCTURE	HINDERMAN 4/2	REL GROUP	A. CARAMANICA 4/6/66
WEIGHTS	D. ROBESCH		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT
ASCENT STAGE~MID-SECTION
-Z27 & X240 WIRING

SIZE B
CODE IDENT NO. 26512
LDW280-10915 A
SCALE NONE
SHEET 1.00 OF 3.00

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-10915 NO CHANGE 4/6/66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE, LAST REV N.C. LOFTED DWG WAS DIMENSIONED DWG ; ADDED SH 1.10 M.H. MULLER 5/23/67						
A	1	1.00, 1.10 3.00						EOA1	IN VIEW C-C FOR -11 $5\frac{5}{8}$ WAS $5\frac{27}{32}$	LTA-8 LM-1 & 2	NOT	REQD	MULLER 5/23/67	☒	☒

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10915	A
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10915-19	E	CLIP	AL ALLOY SH	QQ-A-250/4	2024 - T3	.040 x 2 x 4	NONE	88	
		↕ -18	↕	CLIP	↕	↕	↕	.040 x 2 x 4	↕	↕	
		↕ -17	↕	CLIP	↕	↕	↕	.040 x 2 x 4	↕	↕	
		↕ -15	↕	SUPPORT	AL ALLOY SH	QQ-A-250/4	2024 - T3	.040 x 6 x 9	↕	↕	
		↕ -13	↕	FITTING	AL ALY EXTRN	QQ-A-200/3	2024-T3511	DIE#46352 x 1 1/2	↕	↕	
		LDW280-10915-11	E	SUPPORT	AL ALLOY SH	QQ-A-250/4	2024-T3/T42	.040 x 8 x 8	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

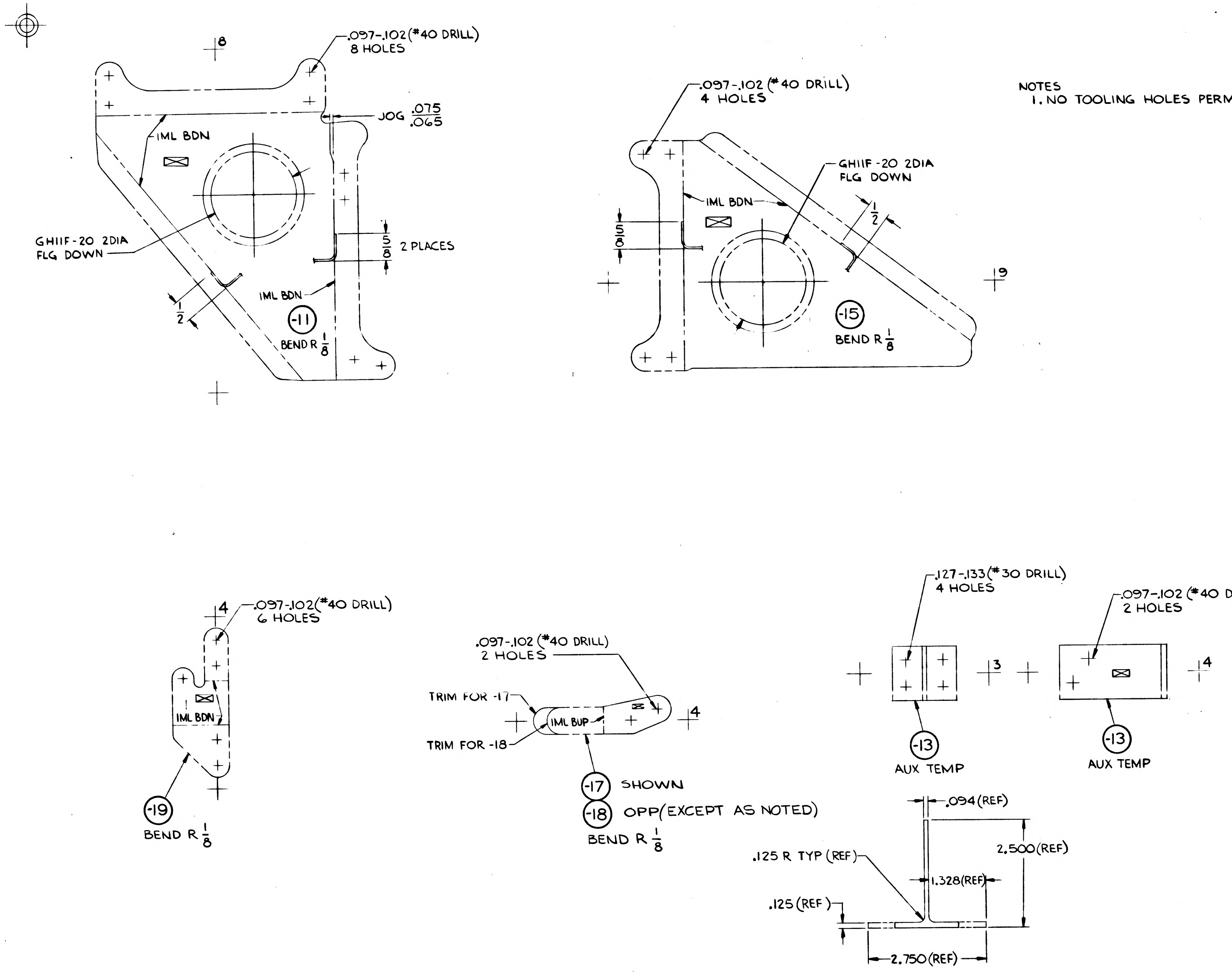
SIZE B
CODE IDENT NO. 26512
LDW280-10915
A
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES
1. NO TOOLING HOLES PERMITTED IN PARTS.



.097-.102 (#40 DRILL) 8 HOLES
JOG .075/.065
IML BDN
GHIIF-20 2DIA FLG DOWN
5/8 2 PLACES
1/2
IML BDN
-11
BEND R 1/8
.097-.102 (#40 DRILL) 4 HOLES
GHIIF-20 2DIA FLG DOWN
IML BDN
1/2
5/16
-15
BEND R 1/8
.097-.102 (#40 DRILL) 6 HOLES
IML BDN
-19
BEND R 1/8
.097-.102 (#40 DRILL) 2 HOLES
TRIM FOR -17
TRIM FOR -18
IML BUP
-17 SHOWN
-18 OPP(EXCEPT AS NOTED)
BEND R 1/8
.127-.133 (#30 DRILL) 4 HOLES
-13
AUX TEMP
.097-.102 (#40 DRILL) 2 HOLES
-13
AUX TEMP
.094 (REF)
2.500 (REF)
.125 R TYP (REF)
1.328 (REF)
.125 (REF)
2.750 (REF)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
LM	SIZE F	CODE IDENT NO. 26512	LDW280-10915	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

ENG 73-5 6-64

LDW280-10915 A

NAS 9-1100

LDW280-10916 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28325	TM-2A/R(60)	1EA
LM	LDW280-28325	LM-2(32)	1EA
LM	LDW280-28325	LM-1(31)	1EA
LM	LDW280-28325	LTA-8(18)	1EA
PART NO. LDW280-10916-15 & -17		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28325	TM-2A/R(60)	2 EA
LM	LDW280-28325	LM-2(32)	2 EA
LM	LDW280-28325	LM-1(31)	2 EA
LM	LDW280-28325	LTA-8(18)	2 EA
PART NO. LDW280-10916-13 & -19		GAEC SCH NO. 32	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED

LAST DASH NO. USED -19

GRUMMAN REL INFO A

PRIM NO. 215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ± .010 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	BERLINQUETT 4-3-66
LAYOUT BY	
CHECKED BY	
GR LEADER	W. TRAUT 4-2-66
STRUCTURE	HILDERMAN 4-4
WEIGHTS	ROBESCH 4-6
VDI	BISCHOFF 4-2-66
PROJ ENGR	R.M. Carbee (E) 11-7-66
REL GROUP	BOTTI 4-8-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

GUSSET
ASCENT STAGE-MID SECTION
ELECTRICAL

SIZE B
CODE IDENT NO. 26512
LDW280-10916
A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-10916 NC 4-8-66

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHG. LAST REV NC LOFTED DWG WAS DIM DWG ADDED SH1.10, 2.00, & 3.00 KLUGE 11-2-66					11-7-66	
A	1	1.00, 1.10					✓	LE0280-288	FOR -13, -15, -17, -19 ADDED TM-2A/R REQUIREMENTS	TM-2A/R	NOT	REQ'D	KLUGE 11-2-66		

CHG APPROVED	LTR	GROUP LDR	STRUCTURE	WEIGHTS	VEH DES INT						
	A										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10916	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10916-19	E	GUSSET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 x 3 x 3	NONE	88	
								-17	↕	↕	↕	↕	↕	.040 x 3 x 3	↕	88	
								-15	↕	↕	↕	↕	↕	.040 x 2 x 3	↕	88	
								LDW280-10916-13	E	GUSSET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 x 3 x 3	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10916	A

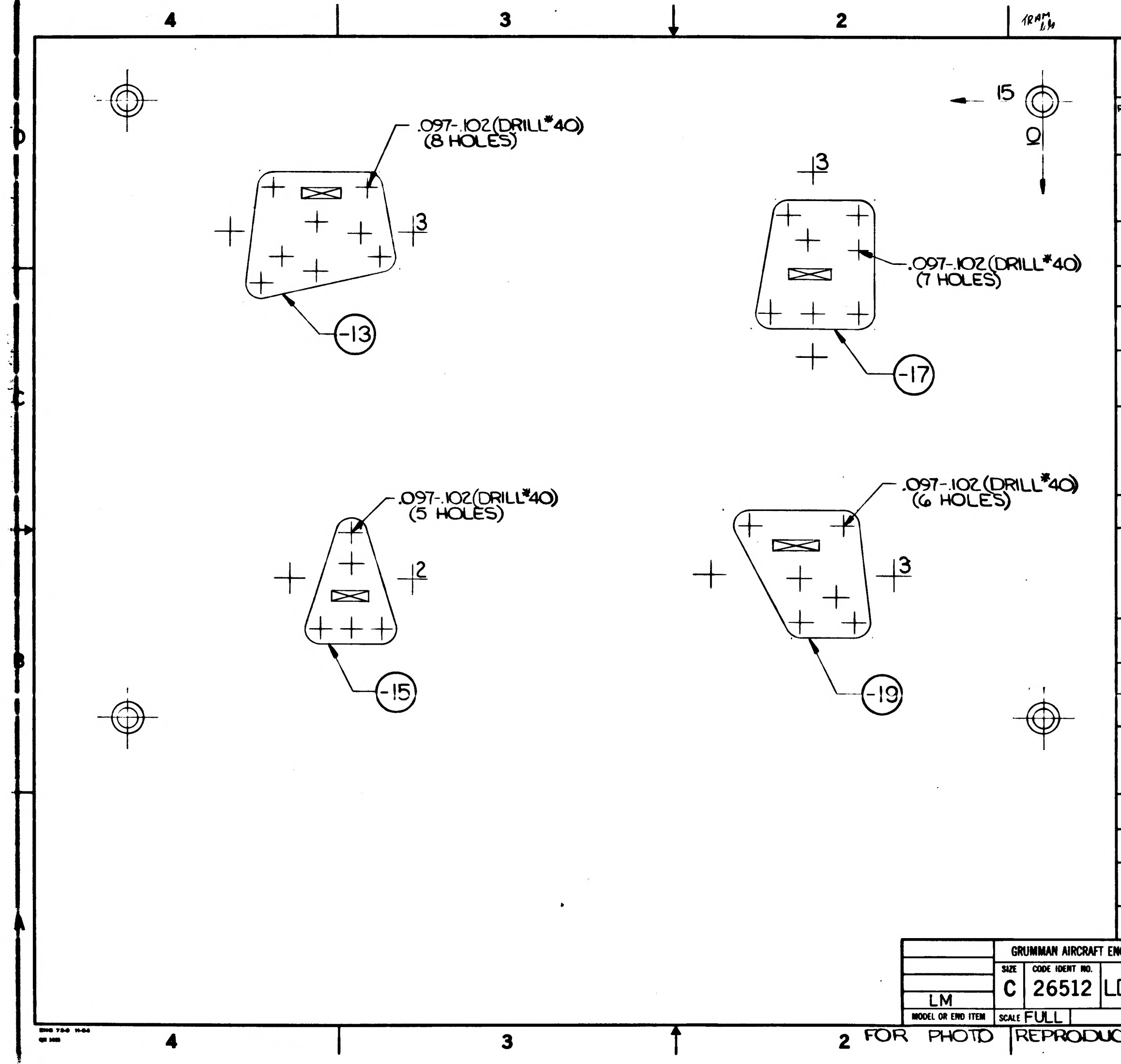
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
$\overset{125}{\surd}$ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
$\overset{200}{\surd}$ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL $\surd$ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	C	26512	LDW280-10916	A
	SCALE FULL		SHEET 300	

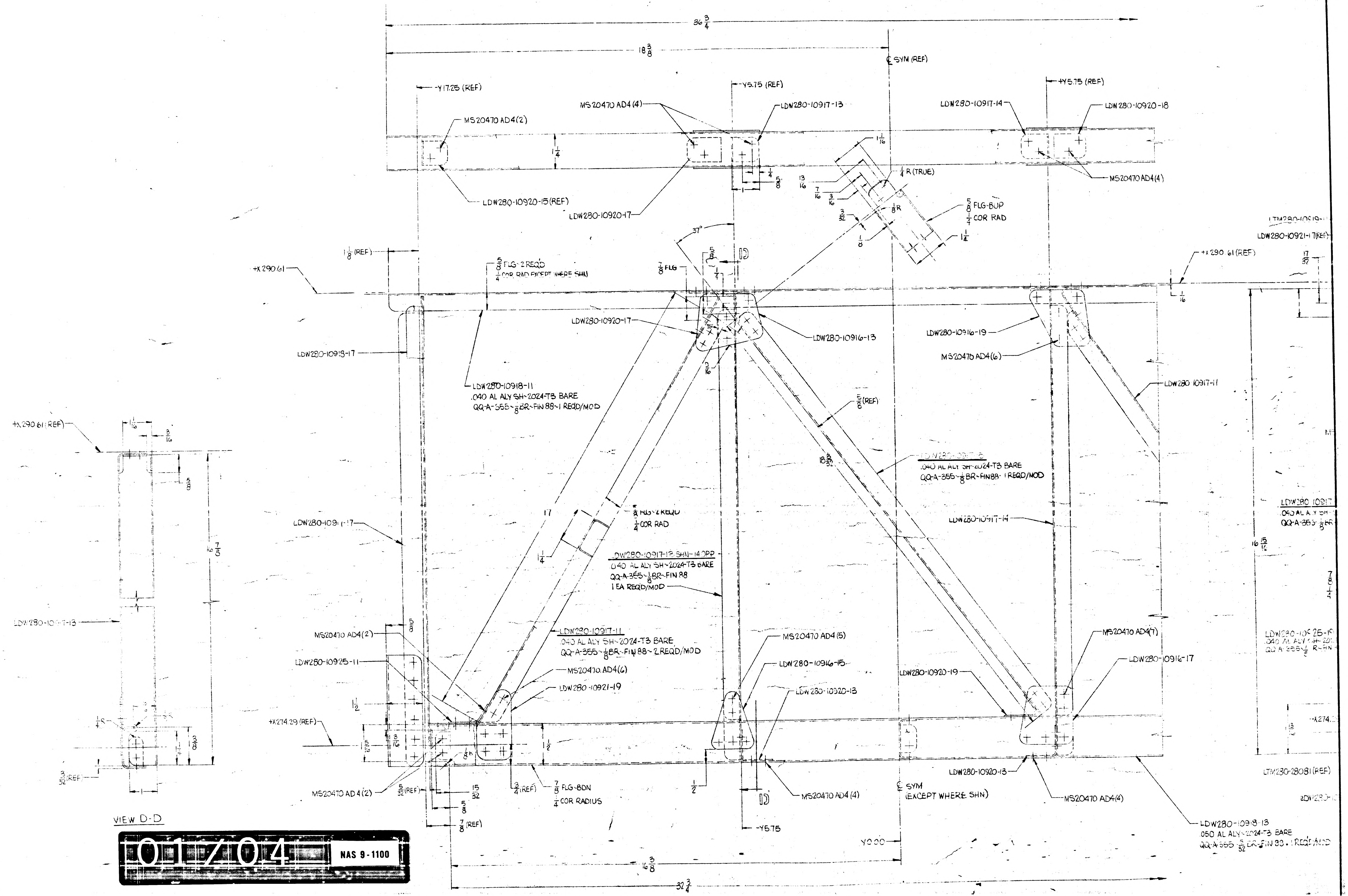
ENG 73-0 11-64

FOR PHOTO REPRODUCTION

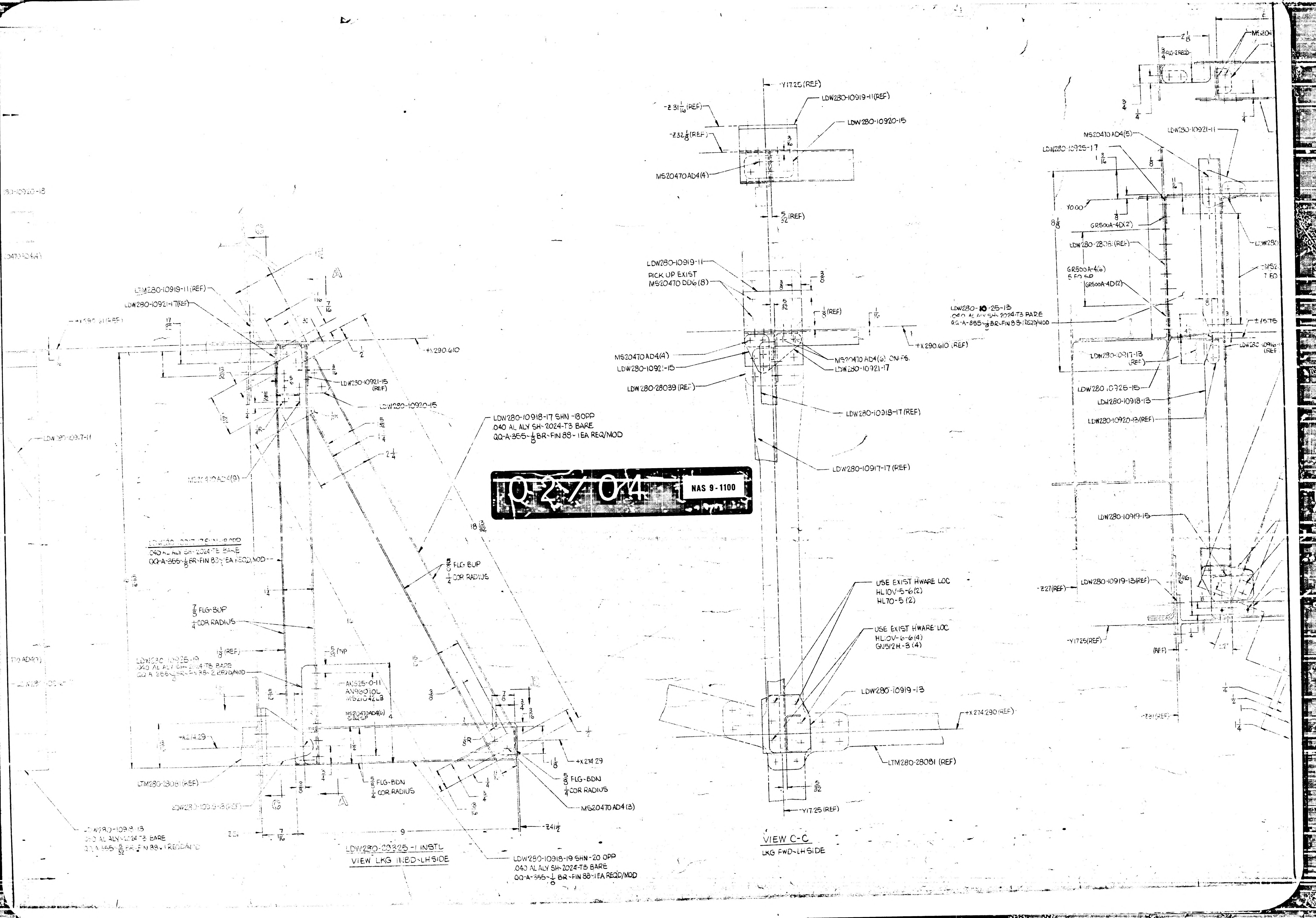
K2

01

NAS 9-1100

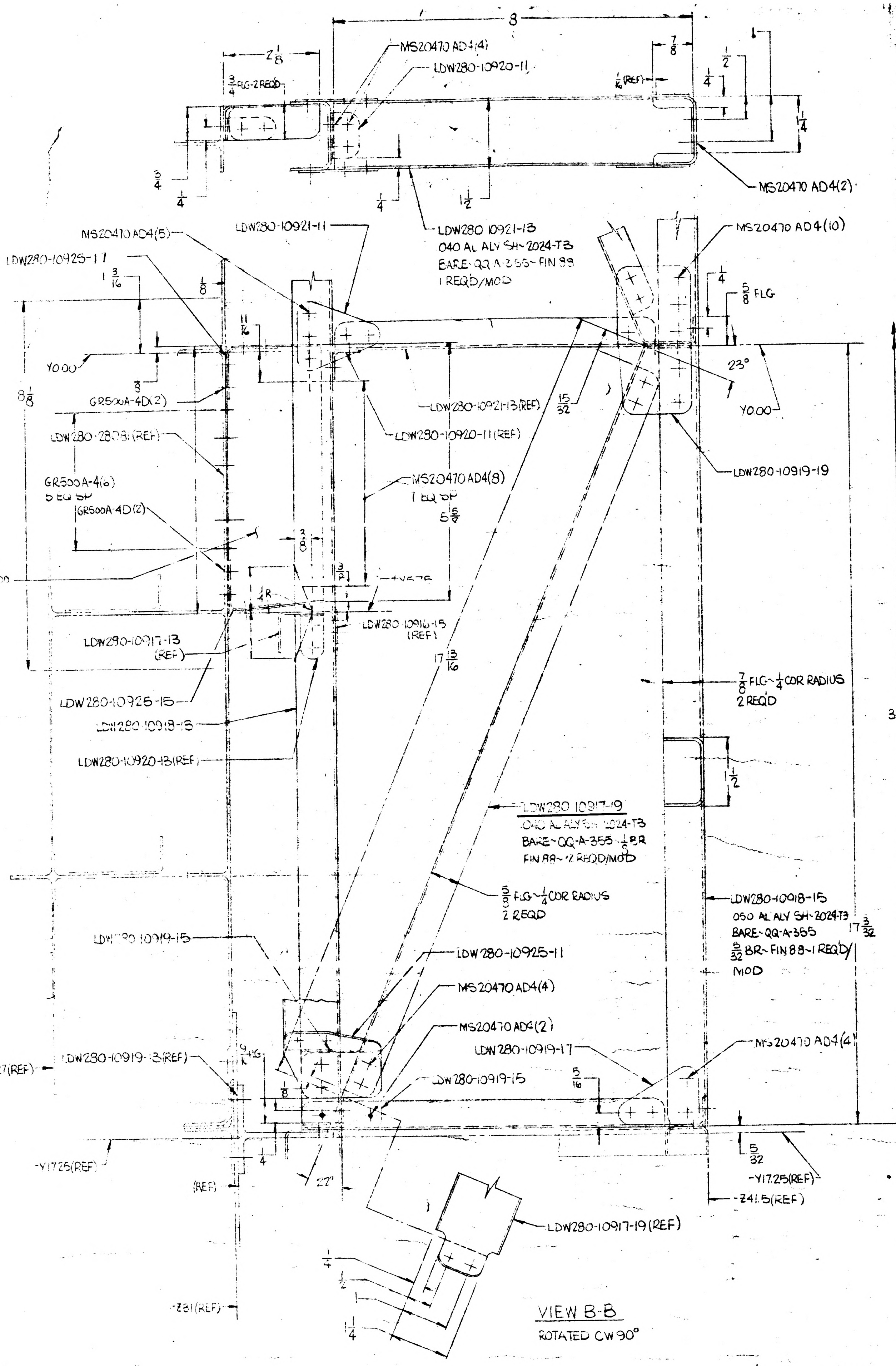

36 3/4
18 3/8
℄ SYM (REF)
-Y17.25 (REF)
-Y5.75 (REF)
+Y5.75 (REF)
MS20470 AD4(4)
MS20470 AD4(2)
LDW280-10917-13
LDW280-10917-14
LDW280-10920-18
MS20470 AD4(4)
LDW280-10920-15(REF)
LDW280-10920-17
1/4 R (TRUE)
5/8 FLG-BUP
1/4 COR RAD
37°
1 1/8 (REF)
+X290.61
5/8 FLG-2 REQD
1/4 COR RAD EXCEPT WHERE SHN
7/8 FLG
+X290.61(REF)
LDW280-10921-17(REF)
LDW280-10920-17
LDW280-10916-13
LDW280-10916-19
MS20470 AD4(6)
LDW280-10918-17
LDW280-10918-11
.040 AL ALY SH-2024-T3 BARE
QQ-A-355-1/8 BR-FIN 88-1 REQD/MOD
LDW280-10917-11
5/8 (REF)
18 3/32
LDW280-10917-15
.040 AL ALY SH-2024-T3 BARE
QQ-A-355-1/8 BR-FIN 88-1 REQD/MOD
+X290.61(REF)
5/8 FLG-2 REQD
1/4 COR RAD
17
1 1/4
LDW280-10911-17
LDW280-10917-14
LDW280-10917-13 SHN-14 OPP
.040 AL ALY SH-2024-T3 BARE
QQ-A-355-1/8 BR-FIN 88
1 EA REQD/MOD
LDW280-10917
.040 AL ALY SH
QQ-A-355-1/8 BR
16 15/16
LDW280-10917-13
LDW280-10917-11
.040 AL ALY SH-2024-T3 BARE
QQ-A-355-1/8 BR-FIN 88-2 REQD/MOD
MS20470 AD4(2)
LDW280-10925-11
MS20470 AD4(6)
LDW280-10921-19
MS20470 AD4(5)
LDW280-10916-15
LDW280-10920-13
LDW280-10920-19
MS20470 AD4(7)
LDW280-10916-17
LDW280-10925-1
.040 AL ALY SH-20
QQ-A-355-1/8 R-FIN
+X274.29 (REF)
+X274.2
1 1/2
15/32
3/16
1/2
MS20470 AD4(2)
5/32 (REF)
15/32
5/8
7/8 (REF)
3/4 (REF)
7/8 FLG-BDN
1/4 COR RADIUS
1/2
MS20470 AD4(4)
-Y5.75
℄ SYM
(EXCEPT WHERE SHN)
LDW280-10920-13
MS20470 AD4(4)
LDW280-10918-13
.050 AL ALY-2024-T3 BARE
QQ-A-355-5/32 CR-FIN 88-1 REQD/MOD
LTM280-28081(REF)
Y0.00
16 3/8
32 3/4
3/32 (REF)
VIEW D-D
D

01Z04 NAS 9-1100


-Y17.25 (REF)
LDW280-10919-11 (REF)
-Z 31 1/16 (REF)
LDW280-10920-15
-Z32 1/8 (REF)
MS20470AD4(4)
5/32 (REF)
LDW280-10919-11
PICK UP EXIST
MS20470 DD6 (8)
1/8 (REF)
+X290.610 (REF)
MS20470 AD4(4)
LDW280-10921-15
LDW280-28039 (REF)
MS20470 AD4(6) ON FS.
LDW280-10921-17
LDW280-10918-17 (REF)
LDW280-10917-17 (REF)
USE EXIST HWARE LOC
HL10V-5-6 (2)
HL70-5 (2)
USE EXIST HWARE LOC
HL10V-6-6 (4)
GN512H-3 (4)
LDW280-10919-13
+X274.290 (REF)
LTM280-28081 (REF)
-Y17.25 (REF)
VIEW C-C
LKG FWD-LH SIDE
LTM280-10919-11 (REF)
LDW280-10921-17 (REF)
+X290.610
LDW280-10921-15 (REF)
LDW280-10920-15
LDW280-10918-17 SHN -180PP
.040 AL ALY SH-2024-T3 BARE
QQ-A-355-1/8 BR-FIN 88-1 EA REQ/MOD
LDW280-10917-11
MS20470AD4(9)
18 13/32
LDW280-10917 SHN-18 OPP
.040 AL ALY SH-2024-T3 BARE
QQ-A-355-1/8 BR-FIN 88-1 EA REQD/MOD
5/8 FLG BUP
1/4 COR RADIUS
7/8 FLG-BUP
1/4 COR RADIUS
1/8 (REF)
5/32 TYP
LDW280-10925-19
.040 AL ALY SH-2024-T3 BARE
QQ-A-355-1/8 BR-FIN 88-2 REQD/MOD
AN525-0-11
AN960 10L
MS21042L3
MS20470AD4(6)
+X274.29
LTM280-28081 (REF)
5/8 FLG-BDN
1/4 COR RADIUS
5/8 FLG-BDN
1/4 COR RADIUS
MS20470 AD4(3)
+X274.29
Z41 1/2
9
LTM280-10918-13
.040 AL ALY-2024-T3 BARE
QQ-A-355-5/32 BR-FIN 88-1 REQD/MOD
LDW280-28325-1 INSTL
VIEW LKG INBD-LH SIDE
LDW280-10918-19 SHN-20 OPP
.040 AL ALY SH-2024-T3 BARE
QQ-A-355-1/8 BR-FIN 88-1 EA REQD/MOD
MS20470 AD4(5)
LDW280-10921-11
LDW280-10925-17
Y0.00
GR500A-4D(2)
LDW280-28081 (REF)
GR500A-4(6)
5 EQ SP
GR500A-4D(2)
LDW280-10925-13
.040 AL ALY SH-2024-T3 BARE
QQ-A-355-1/8 BR-FIN 88-1 REQD/MOD
LDW280-10917-13 (REF)
LDW280-10925-15
LDW280-10918-13
LDW280-10920-13 (REF)
LDW280-10919-15
-Z27 (REF)
LDW280-10919-13 (REF)
-Y17.25 (REF)
MS204
LDW280
+X290.610 (REF)
8 1/8
2 1/8
3/4 FLG-2 REQD

02/04

NAS 9-1100


MS20470 AD4(4)
LDW280-10920-11
3/4 FLG-2 REQD
1/16 (REF)
MS20470 AD4(2)
LDW280-10921-11
LDW280-10921-13
.040 AL ALY SH~2024-T3
BARE~QQ-A-355~FIN 88
1 REQD/MOD
MS20470 AD4(5)
LDW280-10925-17
MS20470 AD4(10)
5/8 FLG
23°
Y0.00
GR500A-4D(2)
LDW280-28325(REF)
LDW280-10921-13(REF)
LDW280-10920-11(REF)
LDW280-10919-19
GR500A-4(6)
5 EQ SP
GR500A-4D(2)
MS20470 AD4(8)
1 EQ SP
LDW280-10925-13
.040 AL ALY SH~2024-T3 BARE
QQ-A-355~FIN 88~1 REQD/MOD
LDW280-10916-15 (REF)
LDW280-10917-13 (REF)
7/8 FLG~1/4 COR RADIUS
2 REQD
LDW280-10925-15
LDW280-10918-13
LDW280-10920-13(REF)
34 3/16
LDW280-10917-19
.040 AL ALY SH~2024-T3
BARE~QQ-A-355~1/8 BR
FIN 88~1 REQD/MOD
5/8 FLG~1/4 COR RADIUS
2 REQD
LDW280-10918-15
.050 AL ALY SH~2024-T3
BARE~QQ-A-355
3/32 BR~FIN 88~1 REQD/MOD
LDW280-10919-15
LDW280-10925-11
MS20470 AD4(4)
MS20470 AD4(2)
LDW280-10919-17
LDW280-10919-15
MS20470 AD4(4)
Z27(REF)
LDW280-10919-13(REF)
Y17.25(REF)
Z41.5(REF)
LDW280-10917-19(REF)
Z31(REF)
VIEW B-B
ROTATED CW 90°

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	[redacted] LSP14-9030	

RECORD DRAWINGS AND E.O.'S

MODEL	RECORD DWG NO.	E. O. NO.	MILITARY NO.	APL NO.

REVISIONS

REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY / DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER IBCC NO.	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MILITARY NUMBER	DISPOSITION OF EXIST PARTS: RE-WORK	SCR…

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PS1 ROCKWELL C TO C		

MANUFACTURING OPERATIONS

NOTES CHECKED √ APPLY TO THIS DWG.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.

REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.

125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.

200√ FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.

FILLET AND INSIDE CORNER RADII TOLERANCES
.016R TO .062R ± .010
.063R TO .250R ± .015
OVER .250R ± .030

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.

MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS

SYMBOL √ DENOTES SURFACE TO BE MACHINED

UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED

NOTES —

1. ALL INFORMATION PERTAINING TO THE FOLLOWING DRAWINGS ARE FOR REFERENCE PURPOSES ONLY —

LDW280-28325	LDW280-10919
~~LDW280-10916~~	LDW280-10920
~~LDW280-10917~~	LDW280-10921
LDW280-10918	LDW280-10925

THE NEXT ASSY, NO REQD/MODULE & EFFECTIVITY FOR THE ABOVE DRAWINGS ARE AS FOLLOWS —

LDW280-28325-1, N.A~LDW280-28019, EFFECTIVITY~LTA-8(18), LEM-1(31), LEM-2(32), NO REQD/MO… 1 ~ -1
LDW280-10916 -13, -15, -17 & -19, N.A.~LDW280-28325, EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-…
NO REQD/MODULE ~ SEE F/D.
LDW280-10917-11, -13, -14, -15, -17, -18 & -19, N.A.~LDW280-28325 EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM…
NO REQD/MODULE ~ SEE F/D.
LDW280-10918-11, -13, -15, -17, -18, -19 & -20, N.A.~LDW280-28325 EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM…
NO REQD/MODULE ~ SEE F/D.
LDW280-10919-11, -13, -14, -15, -17 & -19, N.A.~LDW280-28325 EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM…
NO REQD/MODULE ~ SEE F/D
LDW280-10920-11, -13, -15, -16, -17, -18 & -19, N.A.~LDW280-28325 EFFECTIVITY~LTA-8(18), LEM-1(31) & …
NO REQD/MODULE ~ SEE F/D
LDW280-10921-11, -13, -15, -17 & -19, N.A.~LDW280-28325 EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM…
NO REQD/MODULE ~SEE F/D
LDW280-10925-11, -12, -13, -15, -17 & -19 N.A.~LDW280-28325, EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM…
NO REQD/MODULE ~SEE F/D

I & T EXEMPT

QTY REQD PER ASSY			PART OR IDENTIFYING NO.	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.

MODEL	NEXT ASSY			REQD PER APL
LEM	NOTED	LTA-8(18), LEM-1(31)-2(32) MODULE [redacted]	[redacted]	NOTED
PART NUMBER	[redacted]		GRUMMAN SCH INFO 325	

TO BE REDRAWN ON PRODUCTION FORMAT

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.010 ±0°30'

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

GRUMMAN REL INFO
PE1 LE(001)
Z15 MP12 4-5-66

DRAWN BY	BERLINQUETTE 4366
LAYOUT BY	
~~CHECKED BY~~	VCT
GR LEADER	Traut 4/6/66
~~STRUCTURE~~	
STRUCTURE	
WEIGHTS	A Roberts 4-6-66
PROJ ENGR	4-6-66
APPD	4-8-66

GRUMMAN AIRCRAFT ENGRG C…
BETHPAGE, L. I., N. Y.

CHANNEL ~ASCENT S…
MID-SECT ~ -Z27 ELECT…

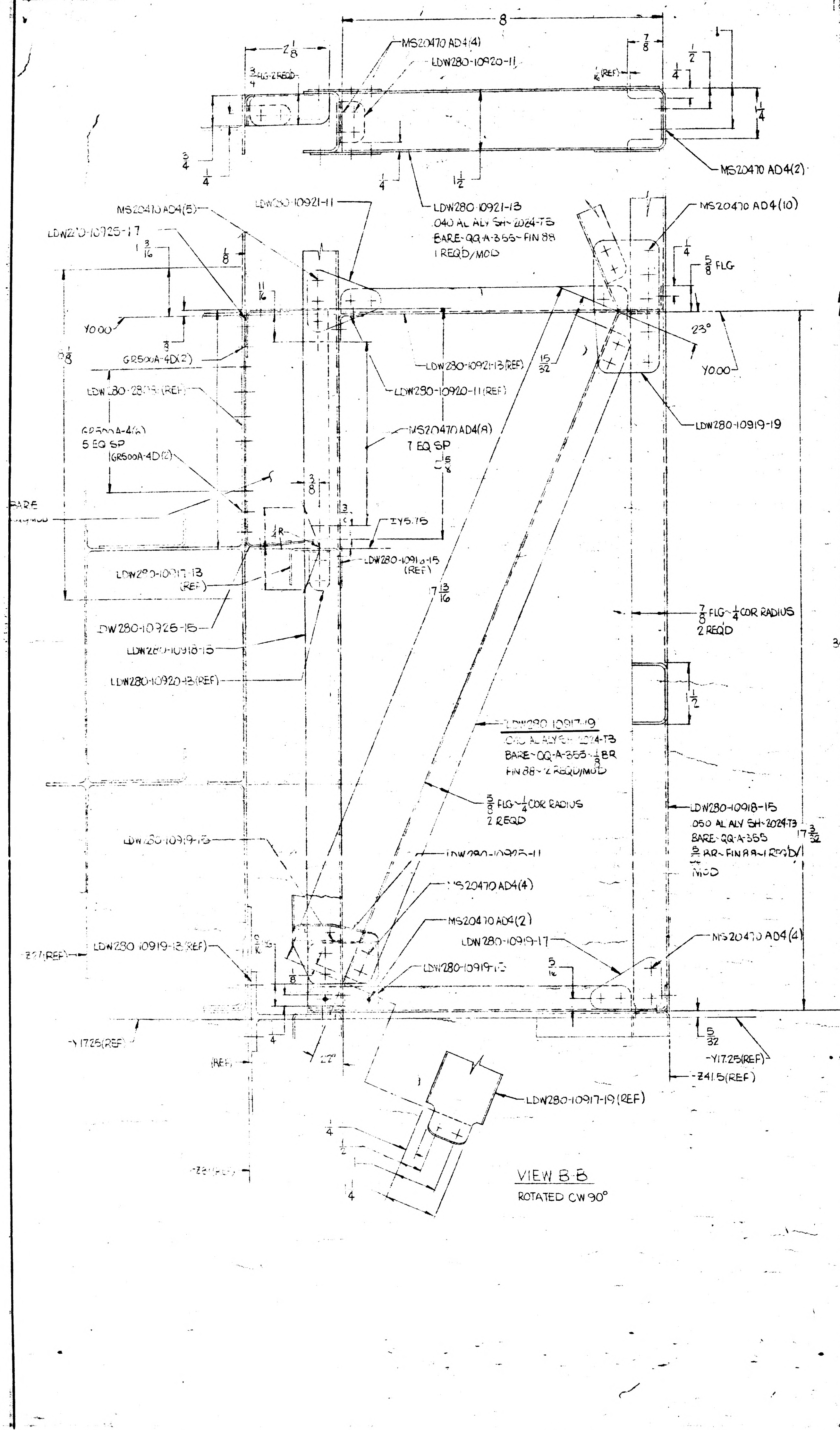
CONTRACT NO.

CODE IDENT NO.	SIZE	
26512	J	LDW280-10…

SCALE FULL

LINE ITEM 1   DOCUMENTATION TY…

03/04   NAS 9-1100



8
$2\frac{1}{8}$
MS20470 AD4(4)
LDW280-10920-11
$\frac{7}{8}$
$\frac{1}{2}$
$\frac{1}{8}$(REF)
$\frac{1}{4}$
$\frac{3}{4}$
$\frac{3}{4}$-2 REQD
$\frac{3}{4}$
$\frac{1}{4}$
$1\frac{1}{2}$
MS20470 AD4(2)
LDW280-10921-13
.040 AL ALY SH-2024-T3
BARE-QQ-A-355-FIN 88
1 REQD/MOD
LDW280-10921-11
MS20470 AD4(10)
MS20470 AD4(5)
LDW280-10925-17
$1\frac{3}{16}$
$\frac{1}{4}$
$\frac{5}{8}$ FLG
$\frac{11}{16}$
Y0.00
$\frac{3}{8}$
23°
Y0.00
GR500A-4D(2)
LDW280-10921-13(REF)
$\frac{15}{32}$
LDW280-28325(REF)
LDW280-10920-11(REF)
LDW280-10919-19
GR500A-4(6)
5 EQ SP
GR500A-4D(2)
MS20470 AD4(8)
7 EQ SP
$\frac{5}{8}$
BARE
$\frac{3}{8}$
Z Y5.15
LDW280-10917-13
(REF)
LDW280-10918-15
(REF)
$17\frac{13}{16}$
$\frac{7}{8}$ FLG-$\frac{1}{4}$ COR RADIUS
2 REQD
$34\frac{3}{16}$
LDW280-10926-15
LDW280-10918-15
LDW280-10920-13(REF)
$\frac{1}{2}$
LDW280-10917-19
.040 AL ALY SH-2024-T3
BARE-QQ-A-355-$\frac{1}{8}$ BR
FIN 88-2 REQD/MOD
$\frac{5}{8}$ FLG-$\frac{1}{4}$ COR RADIUS
2 REQD
LDW280-10918-15
.050 AL ALY SH-2024-T3
BARE-QQ-A-355
$\frac{3}{8}$ BR-FIN 88-1 REQD/MOD
$17\frac{3}{32}$
LDW280-10919-13
LDW280-10925-11
MS20470 AD4(4)
MS20470 AD4(2)
LDW280-10919-17
MS20470 AD4(4)
LDW280-10919-13(REF)
LDW280-10919-15
$\frac{5}{16}$
$\frac{5}{32}$
-Y1.725(REF)
Y1.725(REF)
-Z41.5(REF)
22°
LDW280-10917-19(REF)
$\frac{1}{4}$
4
VIEW B-B
ROTATED CW 90°

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	LSP14-2030	

RECORD DRAWINGS AND E.O.'S				
MODEL	RECORD DWG NO.	E. O. NO.	MILITARY NO.	APL NO.

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PS1 ROCKWELL C TO C		

MANUFACTURING OPERATIONS

NOTES CHECKED √ APPLY TO THIS DWG.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.

REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.

125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.

200√ FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.

FILLET AND INSIDE CORNER RADII TOLERANCES
.016R TO .062R ± .010
.063R TO .250R ± .015
OVER .250R ± .030

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.

MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS

SYMBOL √ DENOTES SURFACE TO BE MACHINED

UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.

REVISIONS														
REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY / DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER IBCC NO.	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MILITARY NUMBER	DISPOSITION OF EXIST PARTS: RE-WORK	SCRAP	ENGRG APPD	GOVT APPD

DWG. SIZE 34 X

PRINTED INFO ONLY
FULL SIZE SHEET AREA (36 X)- SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL)- SQ. FT.

PRINT TRIM LINE

NOTES —

1. ALL INFORMATION PERTAINING TO THE FOLLOWING DRAWINGS ARE FOR REFERENCE PURPOSES ONLY —

LDW280-28325	LDW280-10919
LDW280-10916	LDW280-10920
~~LDW280-10917~~	LDW280-10921
LDW280-10918	LDW280-10925

THE NEXT ASSY, NO REQD/MODULE & EFFECTIVITY FOR THE ABOVE DRAWINGS ARE AS FOLLOWS —

LDW280-28325-1, N.A.~LDW280-28019, EFFECTIVITY~LTA-8(18), LEM-1(31), LEM-2(32), NO REQD/MODULE ~ 1 OF -1
LDW280-10916 -13, -15, -17 & -19, N.A.~LDW280-28325, EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32), NO REQD/MODULE ~ SEE F/D.
LDW280-10917-11, -13, -14, -15, -17, -18 & -19, N.A.~LDW280-28325, EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32), NO REQD/MODULE ~ SEE F/D.
LDW280-10918-11, -13, -15, -17, -18, -19 & -20, N.A.~LDW280-28325 EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32), NO REQD/MODULE ~ SEE F/D.
LDW280-10919-11, -13, -14, -15, -17 & -19, N.A.~LDW280-28325 EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32), NO REQD/MODULE ~ SEE F/D
LDW280-10920-11, -13, -15, -16, -17, -18 & -19, N.A.~LDW280-28325 EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32), NO REQD/MODULE ~ SEE F/D.
LDW280-10921-11, -13, -15, -17 & -19, N.A.~LDW280-28325 EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32), NO REQD/MODULE ~ SEE F/D
LDW280-10925-11, -12, -13, -15, -17 & -19 N.A.~LDW280-28325, EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32) TWO REQD/MODULE ~ SEE F/D

04/04 NAS 9-1100

I & T EXEMPT

QTY REQD PER ASSY		PART OR IDENTIFYING NO.	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE

LEM	NOTED	LTA-8(18), LEM-1(31)-2(32)		NOTED
MODEL	NEXT ASSY	MODULE		REQD PER APL
PART NUMBER			GRUMMAN SCH INFO 325	

TO BE REDRAWN ON PRODUCTION FORMAT

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED: FRACTIONS - DECIMALS - ANGLES ± 1/32 ±.010 ±0°30'	DRAWN BY	BERLINQUETTE 4-3-66	GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., N. Y.
	LAYOUT BY		
	CHECKED BY	VCI	CHANNEL ~ ASCENT STAGE MID-SECT ~ -Z27 ELECTRICAL
ORIG DWG AUTH	GR LEADER	4/8/66	
DETAIL SPEC REQUIREMENT	STRUCTURE		CONTRACT NO.
CLASS II ENGRG CHANGE	WEIGHTS	4-6-66	CODE IDENT NO. 26512
CLASS I ENGRG CHANGE	PROJ ENGR	4-6-66	SIZE J
GRUMMAN REL INFO	APPD	4-8-66	LDW280-10917
PEI VE(001) / 215 MP121			SCALE FULL / SHEET 1

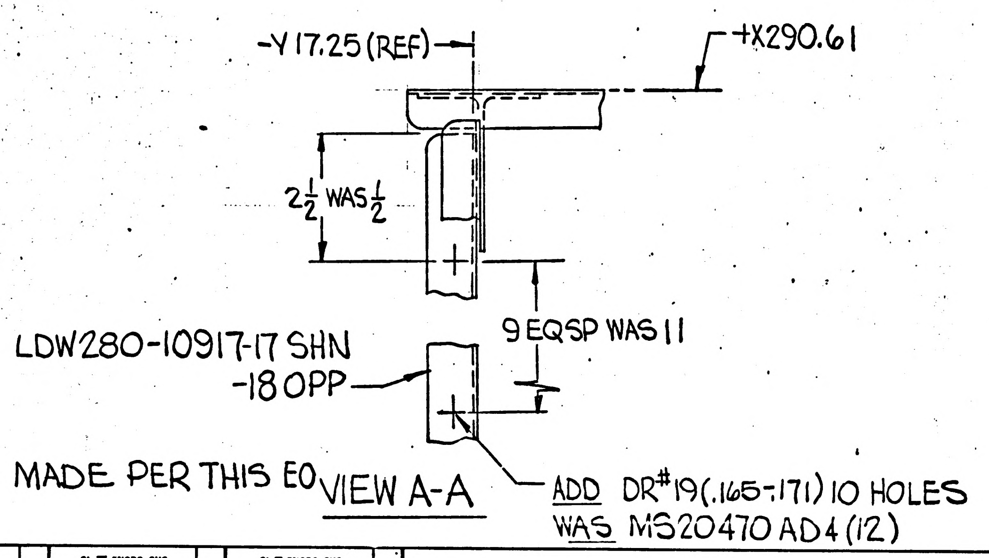
LINE ITEM #1 DOCUMENTATION TYPE II

LDW280-10917

IG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10917
EO NO. A1
CONTROL INFO NO. LDW280-6418



-Y 17.25 (REF)
+X290.61
$2\frac{1}{2}$ WAS $\frac{1}{2}$
9 EQ SP WAS 11
LDW280-10917-17 SHN
-18 OPP
VIEW A-A
ADD DR#19 (.165-.171) 10 HOLES
WAS MS20470 AD4 (12)

NOTE
PARTS MADE PER THIS EO

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		5

REASON FOR EO: FOR PROPER MFG OF PARTS

DESCRIPTION OF EO: ADDED: $2\frac{1}{2}$ DIM. WAS $\frac{1}{2}$; 9 EQ SP WAS 11; DR#19 (.165-.171) 10 HOLES WAS MS20470 AD4 (12)

GAEC EO RELEASE: JR 10

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
EM		NOT REQ'D	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓		NOT	REQ'D
REVISE DWG	RECORD EO	REWORK	SCRAP

APPROVED BY	WT	WJH		~	5-16			
DATE	5/16/66	5/31		~				5-16-66
	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

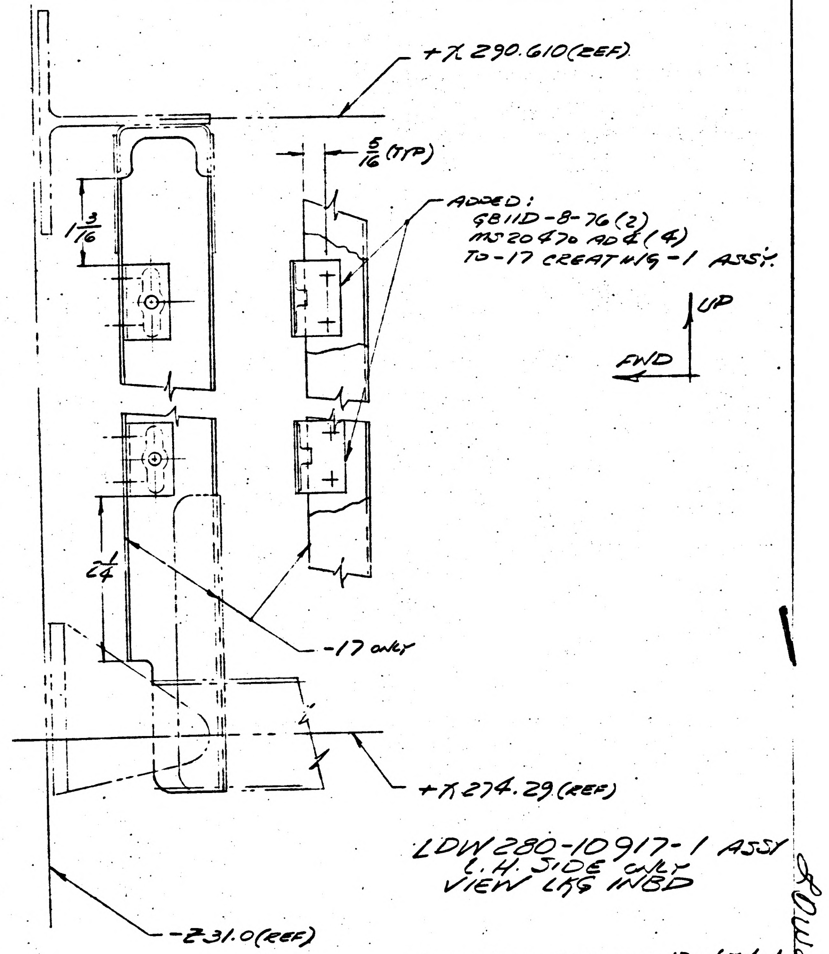
PRIORITY: E
DRAWING TITLE: CHANNEL ~ A/S ~ M/S ~ UPPER ELECTRICAL
DRAWING NO.: LDW280-10917
EO NO.: A1

ISSUED BY LOUIS BERLINQUETTE 5-14-66 SECTION VD1 GROUP NO. 335 PL 5

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 22.3 REV 3-65

DWG. NO. LDW 280 -10917
EO NO. A2
CONTROL INFO NO. LDW 280-6740


+X 290.610 (REF)
5/16 (TYP)
1 3/16
ADDED:
GB11D-8-76 (2)
MS20470 AD4 (4)
TO -17 CREATING -1 ASSY.
UP
FWD
2 1/4
-17 ONLY
+X 274.29 (REF)
LDW280-10917-1 ASSY
L.H. SIDE ONLY
VIEW LKG INBD
-Z 31.0 (REF)

IN MOD/BLK REPLACE -17 WITH -1

LDW280-10917 A2

DETAIL SPEC REQD ☐ CL II ENGRG CHG ✓ CL I ENGRG CHG ☐ 5

REASON FOR EO: PROVIDE SUPPORT FOR E.C.S. COOLANT LINE

DESCRIPTION OF EO: TO -17 ADDED GB11D-8-76(2) & MS20470 AD4(4) CREATING -1 ASSY

GAEC EO RELEASE

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA-8 (18)	
LEM		LEM-1 (31)	
LEM		LEM-2 (32)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK ✓ SCRAP

APPROVED BY	[illegible]	AAR		[illegible]	[illegible]		[illegible]	[illegible]
DATE	5/10/66	5-[illegible]		[illegible]	5/11		[illegible]	5-9-66
5-9-66	VD1	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	DEPT

PRIORITY: C
DRAWING TITLE: BRKT CHANNEL ASCENT STAGE MID SECT -Z27 ELECTRICAL
DRAWING NO.: LDW280-10917
EO NO.: A2

ISSUED BY N. NEILSEN SECTION EQ. LINES, VD1 GROUP NO. 332 PL. 35

*

GRUMMAN AIRCRAFT ENGINEERING CORP.

CODE IDENT NO. 26512

ENGINEERING ORDER

ENG 37.1 REV 3-65

~~DWG~~ E NO. LEO 280

EO NO. 288

CONTROL INFO NO. LDW280A0749

ADD TM-2A|R EFFECTIVITY TO THE FOLLOWING DWGS.

DWG NO.	DASH NO *	NO. REQ'D	N/A	TITLE	CHANGE NO.
✓LDW280-10916	-13,-19	2 EA	LDW280-28325	GUSSET-ASCENT STAGE-MID SEC -Z27 ELECTRICAL	A1
-10916	-15,-17	1 EA	↑	" " " " " "	
✓ -10917	-11,-19	2 EA		CHANNEL-ASCENT STAGE-MID SEC--Z27 ELECTRICAL	A3
-10917	-13,-14,-15,-17,-18	1 EA		↕ ↕ ↕ ↕	
-10918	-11,-13,-17,-18	1 EA			A5
-10918	-19,-20,-15	1 EA		CHANNEL-ASCENT STAGE-MID SEC--Z27 ELECTRICAL	
-10919	-15,-17	4 EA		GUSSET-ASCENT STAGE-MID SEC--Z27 ELECTRICAL	A1
-10919	-19	2		" " " " " " "	
-10920	-11,-15,-16	1 EA		CLIP-ASCENT STAGE-MID SEC--Z27 ELECTRICAL	A1
-10920	-17,-18,-19	1 EA		" " " " " " "	
-10920	-13	2		" " " " " " "	
-10921	-11,-15,-17,-19	2 EA		GUSSET-ASCENT STAGE-MID SEC--Z27 ELECTRICAL	A1
-10921	-13	1		" " " " " " "	
-10925	-11,-12,-13,-15,-17	1 EA	↓	ANGLE-ASCENT STAGE-MID SEC--Z27 ELECTRICAL	A2
LDW280-10925	-19	2	LDW280-28325	" " " " " " "	

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐	3

REASON FOR EO: ADDITIONAL REQUIREMENTS PROVIDED FOR TM-2A|R

DESCRIPTION OF EO: FOR * ADDED TM-2A|R REQUIREMENTS.

GAEC C EO RELEASE: LE 10J

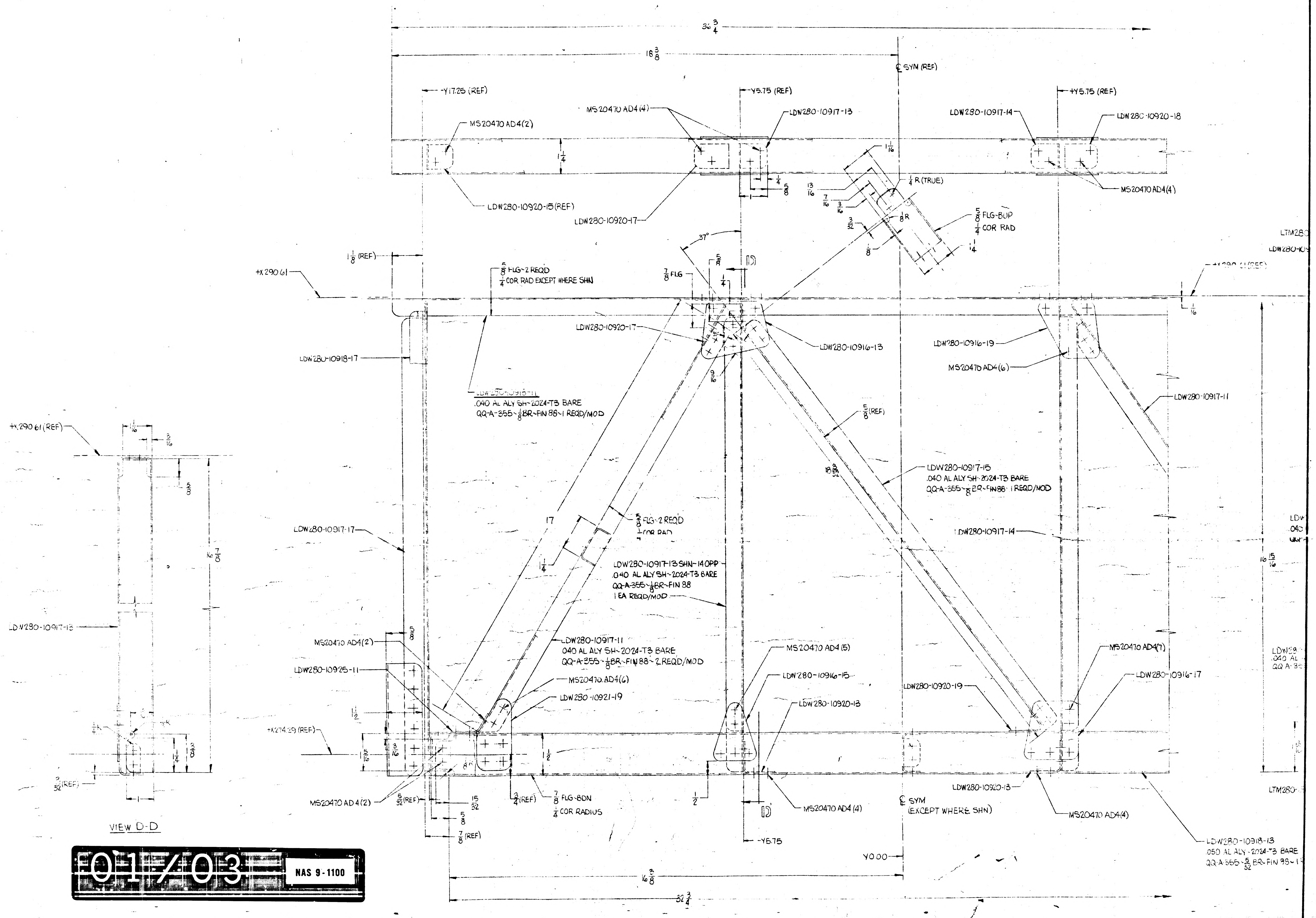
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		TM-2A|R(60)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY							
✓		NOT	REQ'D	DATE	9/28/66			—	9-28-66	10-5-66	10/3/66
REVISE DWG	RECORD EO	REWORK	SCRAP		VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY	DRAWING TITLE	~~DWG~~ EO NO.	EO NO.
C	NOTED	LEO 280-	288

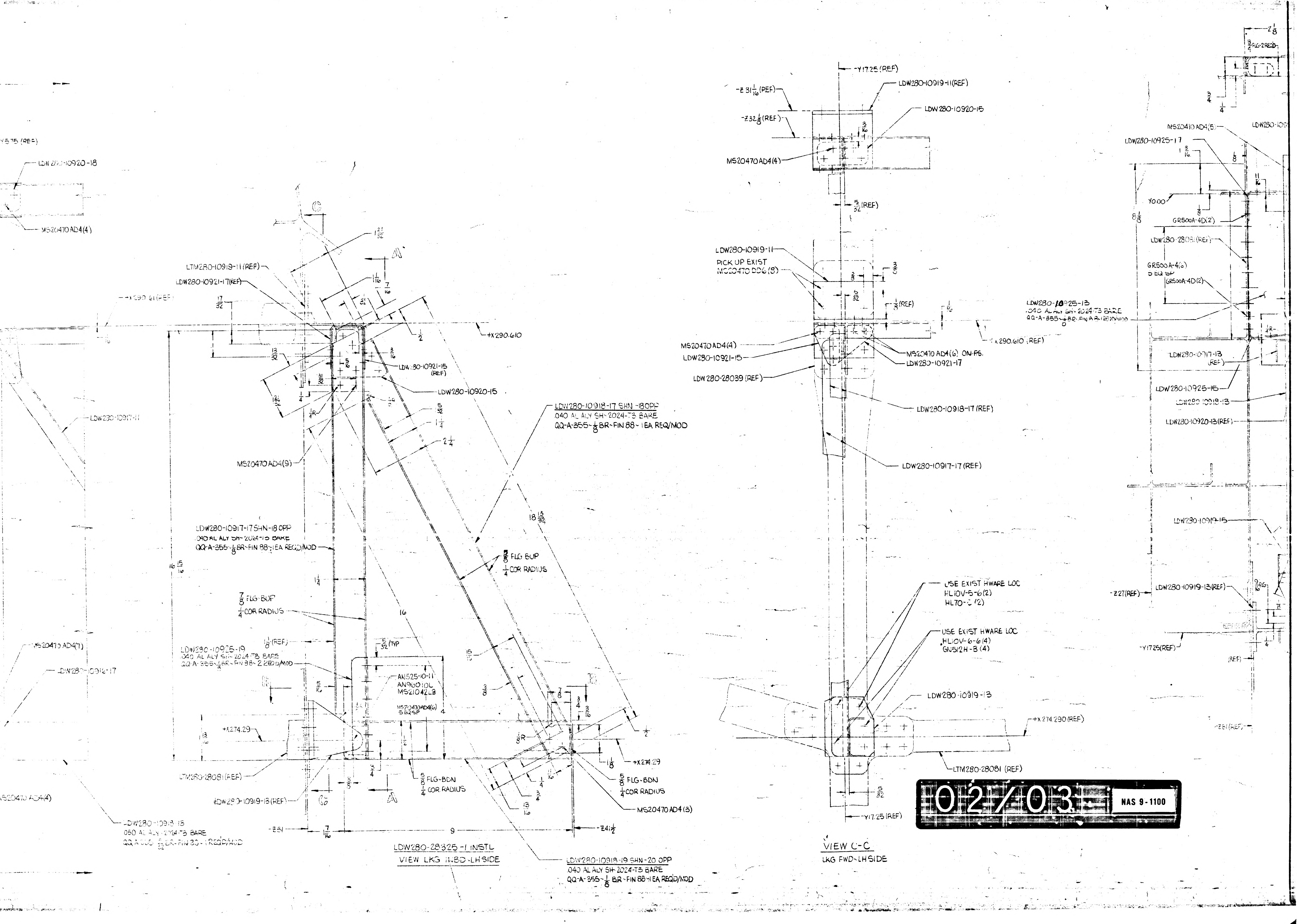
ISSUED BY J J FISCH SECTION VDI GROUP NO. 335 PL 35

01 NAS 9-1100


36 3/4
18 3/8
℄ SYM (REF)
-Y17.25 (REF)
-Y5.75 (REF)
+Y5.75 (REF)
MS20470 AD4(4)
LDW280-10917-13
LDW280-10917-14
LDW280-10920-18
MS20470 AD4(2)
1 1/4
1 1/16
1/4
5/8
1/4 R (TRUE)
MS20470 AD4(4)
LDW280-10920-15 (REF)
LDW280-10920-17
13/16
7/16
3/16
3/32
1/8 R
5/8 FLG-BUP
1/4 COR RAD
1 1/4
1/8
37°
1 1/8 (REF)
+X290.61
5/8 FLG~2 REQD
1/4 COR RAD EXCEPT WHERE SHN
7/8 FLG
5/8
1/4
D
LTM280-
LDW280-10
+X290.61 (REF)
1/16
LDW280-10920-17
LDW280-10916-13
LDW280-10916-19
MS20470 AD4(6)
LDW280-10918-17
9/16
LDW280-10918-11
.040 AL ALY SH~2024-T3 BARE
QQ-A-355~1/8 BR~FIN 88~1 REQD/MOD
LDW280-10917-11
5/8 (REF)
+X290.61 (REF)
1 1/16
3/16
5/8
16 7/8
18 3/32
LDW280-10917-15
.040 AL ALY SH-2024-T3 BARE
QQ-A-355~1/8 BR~FIN 88~1 REQD/MOD
17
5/8 FLG~2 REQD
1/4 COR RAD
1 1/4
LDW280-10917-17
LDW280-10917-14
LDW280-10917-13 SHN-14 OPP
.040 AL ALY SH~2024-T3 BARE
QQ-A-355~1/8 BR~FIN 88
1 EA REQD/MOD
16 15/16
LDW280-10917-13
LDW280-10917-11
.040 AL ALY SH~2024-T3 BARE
QQ-A-355~1/8 BR~FIN 88~2 REQD/MOD
MS20470 AD4(2)
5/8
LDW280-10925-11
MS20470 AD4(6)
LDW280-10921-19
MS20470 AD4(5)
LDW280-10916-15
LDW280-10920-13
LDW280-10920-19
MS20470 AD4(7)
LDW280-10916-17
1 1/2
+X274.29 (REF)
3/16
1 5/16
1/2
1 5/16
3/32 (REF)
1/4
1 3/4
1
5/32 (REF)
MS20470 AD4(2)
15/32
5/8
7/8 (REF)
3/4 (REF)
7/8 FLG-BDN
1/4 COR RADIUS
1/2
D
MS20470 AD4(4)
-Y5.75
℄ SYM
(EXCEPT WHERE SHN)
LDW280-10920-13
MS20470 AD4(4)
LTM280-
LDW280-10918-13
.050 AL ALY-2024-T3 BARE
QQ-A-355-5/32 BR-FIN 88~1
Y0.00
16 3/8
32 3/4
VIEW D-D

01/03

NAS 9-1100

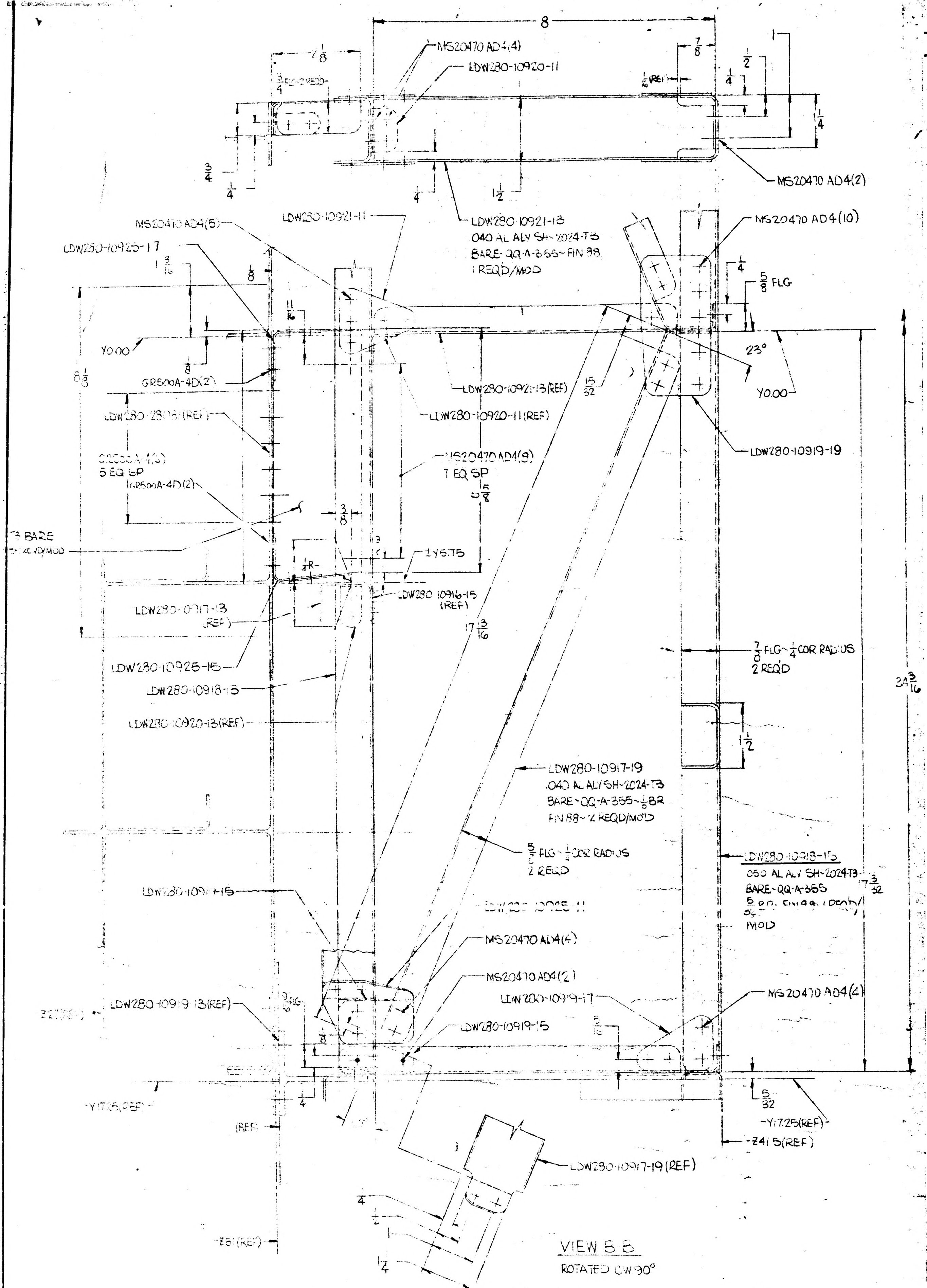

LDW280-10920-18
MS20470AD4(4)
LTM280-10919-11(REF)
LDW280-10921-17(REF)
+X290.610
LDW280-10921-15 (REF)
LDW280-10920-15
LDW280-10917-11
LDW280-10918-17 SHN-18 OPP
.040 AL ALY SH-2024-T3 BARE
QQ-A-355-$\frac{1}{8}$BR-FIN 88-1EA REQ/MOD
MS20470AD4(9)
$18\frac{13}{32}$
LDW280-10917-17 SHN-18 OPP
.040 AL ALY SH-2024-T3 BARE
QQ-A-355-$\frac{1}{8}$BR-FIN 88-1EA REQD/MOD
$16\frac{15}{16}$
$\frac{5}{8}$ FLG-BUP
$\frac{1}{4}$ COR RADIUS
$\frac{7}{8}$ FLG-BUP
$\frac{1}{4}$ COR RADIUS
16
$1\frac{1}{8}$(REF)
$\frac{5}{32}$TYP
MS20470AD4(7)
LDW280-10925-19
.040 AL ALY SH-2024-T3 BARE
QQ-A-355-$\frac{1}{8}$BR-FIN 88-2 REQD/MOD
LDW280-10918-17
AN525-10-11
AN960-10L
MS21042L3
MS20470AD4(6) 5 EQ SP
+X274.29
LTM280-28081(REF)
LDW280-10919-13(REF)
$\frac{5}{8}$ FLG-BDN
$\frac{1}{4}$ COR RADIUS
+X274.29
$\frac{5}{8}$ FLG-BDN
$\frac{1}{4}$ COR RADIUS
MS20470AD4(3)
MS20470AD4(4)
-Z51
9
-Z41$\frac{1}{2}$
LDW280-10918-13
.050 AL ALY-2024-T3 BARE
QQ-A-355-$\frac{5}{32}$BR-FIN 80-1 REQD/MOD
LDW280-10918-19 SHN-20 OPP
.040 AL ALY SH-2024-T3 BARE
QQ-A-355-$\frac{1}{8}$BR-FIN 88-1EA REQD/MOD
-Y17.25(REF)
-Z31$\frac{1}{16}$(REF)
-Z32$\frac{1}{8}$(REF)
LDW280-10919-11(REF)
LDW280-10920-15
MS20470AD4(4)
$\frac{5}{32}$(REF)
LDW280-10919-11
PICK UP EXIST
MS20470DD6(8)
$\frac{1}{8}$(REF)
MS20470AD4(4)
LDW280-10921-15
LDW280-28039(REF)
MS20470AD4(6) ON-FS.
LDW280-10921-17
+X290.610 (REF)
LDW280-10918-17(REF)
LDW280-10917-17(REF)
USE EXIST HWARE LOC
HL10V-5-6(2)
HL70-5(2)
USE EXIST HWARE LOC
HL10V-6-6(4)
GN512H-3(4)
LDW280-10919-13
+X274.290(REF)
LTM280-28081 (REF)
-Y17.25(REF)
LDW280-10925-13
.040 AL ALY SH-2024-T3 BARE
QQ-A-355-$\frac{1}{8}$BR-FIN 88-1 REQD/MOD
MS20410AD4(5)
LDW280-10925-17
Y0.00
$8\frac{1}{8}$
GR500A-4D(2)
LDW280-28081(REF)
GR500A-4(6)
5 EQ SP
GR500A-4D(2)
LDW280-10917-13 (REF)
LDW280-10925-15
LDW280-10918-13
LDW280-10920-13(REF)
LDW280-10919-15
-Z27(REF)
LDW280-10919-13(REF)
-Y17.25(REF)
-Z51(REF)

LDW280-28325-1 INSTL
VIEW LKG INBD-LH SIDE

VIEW C-C
LKG FWD-LH SIDE

02/03

NAS 9-1100


8
2 1/8
7/8
1
1/2
1/4
1 1/4
1/16 (REF)
3/4 FLG 2 REQD
MS20470 AD4(4)
LDW280-10920-11
MS20470 AD4(2)
3/4
1/4
4
1 1/2
LDW280-10921-13
.040 AL ALY SH~2024-T3
BARE-QQ-A-355~FIN 88
1 REQD/MOD
MS20470 AD4(5)
LDW280-10921-11
LDW280-10925-17
1 3/16
1/8
11/16
Y0.00
8 1/8
GR500A-4D(2)
LDW280-28018(REF)
LDW280-10921-13(REF)
LDW280-10920-11(REF)
15/32
MS20470 AD4(10)
1/4
5/8 FLG
23°
Y0.00
LDW280-10919-19
GR500A-4(6)
5 EQ SP
GR500A-4D(2)
MS20470 AD4(9)
7 EQ SP
5 5/8
3/8
T3 BARE
REQD/MOD
1/4 R
±Y5.75
LDW280-10916-15 (REF)
LDW280-10917-13 (REF)
17 13/16
LDW280-10925-15
LDW280-10918-13
LDW280-10920-13(REF)
7/8 FLG~1/4 COR RADIUS
2 REQ'D
34 3/16
1 1/2
LDW280-10917-19
.040 AL ALY SH~2024-T3
BARE~QQ-A-355~1/8 BR
FIN 88~2 REQD/MOD
5/8 FLG~1/4 COR RADIUS
2 REQD
LDW280-10918-15
.050 AL ALY SH~2024-T3
BARE~QQ-A-355
5/32 BR~FIN 88~1 REQD/MOD
17 3/32
LDW280-10919-15
LDW280-10925-11
MS20470 AD4(4)
MS20470 AD4(2)
LDW280-10919-17
MS20470 AD4(4)
Z27(REF)
LDW280-10919-13(REF)
9/16 FLG
1/8
LDW280-10919-15
5/16
1/4
5/32
-Y17.25(REF)
-Y17.25(REF)
-Z41.5(REF)
(REF)
LDW280-10917-19(REF)
4
1/2
1 1/4
Z51(REF)
VIEW B-B
ROTATED CW 90°

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G.S.S.	
10	ZINC CHROMATE PRIMER	G.S.S.	
15	TINTED PRIMER: 1 COAT	G.S.S.	
75	ALODINE	G.S.S.	
88	ANODIZE	[redacted] LSP14-9030	

RECORD DRAWINGS AND E.O.'S				
MODEL	RECORD DWG NO.	E.O. NO.	MILITARY NO.	APL NO.

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PS1 ROCKWELL C TO C		

MANUFACTURING OPERATIONS

NOTES CHECKED √ APPLY TO THIS DWG.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.	
200√ FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	✓
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	

REVISIONS

REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY / DCRE OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER IBCC NO.	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MILITARY NUMBER	DISPOSITION OF EXIST PARTS: RE WORK	SCRAP	ENGRG APPD	GOVT APPD

DWG. SIZE 34 X

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X) = SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = SQ. FT.

PRINT TRIM LINE

NOTES —

1. ALL INFORMATION PERTAINING TO THE FOLLOWING DRAWINGS ARE FOR REFERENCE PURPOSES ONLY —

LDW280-28325	LDW280-10919
LDW280-10916	LDW280-10920
LDW280-10917	LDW280-10921
	LDW280-10925

THE NEXT ASSY, NO REQD/MODULE & EFFECTIVITY FOR THE ABOVE DRAWINGS ARE AS FOLLOWS —

LDW280-28325-1, N.A.~LDW280-28019, EFFECTIVITY~LTA-8(18), LEM-1(31), LEM-2(32), NO REQD/MODULE ~ 1OF -1
LDW280-10916-13,-15,-17&-19, N.A.~LDW280-28325, EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32), NO REQD/MODULE ~ SEE F/D.
LDW280-10917-11,-13,-14,-15,-17,-18 &-19, N.A.~LDW280-28325 EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32), NO REQD/MODULE ~ SEE F/D.
LDW280-10918-11,-13,-15,-17,-18,-19&-20, N.A.~LDW280-28325 EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32), NO REQD/MODULE ~ SEE F/D
LDW280-10919-11,-13,-14,-15,-17&-19, N.A. LDW280-28019, EFFECTIVITY [illegible] LTA-8(18), LEM-1(31) & LEM-2(32), NO REQD/MODULE ~ SEE F/D
LDW280-10920-11,-13,-15,-16,-17,-18 & 19, N.A.~LDW280-28325 EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32), NO REQD/MODULE ~ SEE F/D.
LDW280-10921-11,-13,-15,-17 & -19, N.A.~LDW 280-28325 EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32), NO REQD/MODULE ~ SEE F/D
LDW280-10925-11,-12,-13,-15,-17&-19 N.A. ~LDW280-28325 EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32) NO REQD/MODULE ~ SEE F/D

03/03 NAS 9-1100

I & T EXEMPT

QTY REQD PER ASSY			PART OR IDENTIFYING NO.	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE

TO BE REDRAWN ON PRODUCTION FORMAT

LEM	NOTED	LTA-8(18), LEM-1(31)-2(32)		NOTED
MODEL	NEXT ASSY	MODULE [redacted]		REQD PER APL
PART NUMBER ~~[illegible]~~			GRUMMAN SCH INFO 325	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.010 ±0°30'
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE
GRUMMAN REL INFO
PP1 LE(001)
215 MP12 RS 4-6

DRAWN BY BERLINQUETTE 4-3-66
LAYOUT BY
~~CHECKED~~ VDI
GR LEADER W. Trant 4/5/66
~~STRUCTURE~~
STRUCTURE
WEIGHTS 4-6
PROJ ENGR 4-6-66
~~GOVT~~ APPD 4-8-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

CHANNEL ~ ASCENT STAGE
MID-SECT ~ -227 ELECTRICAL

CONTRACT NO
CODE IDENT NO. 26512
SIZE J
LDW280-10918
SCALE FULL
SHEET 1 [redacted]

3

LINE ITEM #1 DOCUMENTATION TYPE II

LDW280-10918

LDW280-10918

ENG 32.1 REV 3-65

*

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

~~DWG~~ E NO. LEO 280
EO NO. 288
CONTROL INFO NO. LDW280A0749

ADD TM-2A|R EFFECTIVITY TO THE FOLLOWING DWGS.

DWG NO.	DASH NO *	NO. REQ'D	N/A	TITLE	CHANGE NO.
✓ LDW280-10916	-13, -19	2 EA	LDW280-28325	GUSSET-ASCENT STAGE-MID SEC -Z27 ELECTRICAL	A1
✓ ↑ -10916	-15, -17	1 EA	↑	" " " " " "	
✓ -10917	-11, -19	2 EA		CHANNEL-ASCENT STAGE-MID SEC--Z27 ELECTRICAL	A3
-10917	-13,-14,-15,-17,-18	1 EA		↕ ↕ ↕ ↕	
✓ -10918	-11,-13,-17,-18	1 EA			A5
-10918	-19,-20,-15	1 EA		CHANNEL-ASCENT STAGE-MID SEC--Z27 ELECTRICAL	
-10919	-15, -17	4 EA		GUSSET-ASCENT STAGE-MID SEC--Z27 ELECTRICAL	A1
-10919	-19	2		" " " " " " "	
-10920	-11, -15, -16	1 EA		CLIP-ASCENT STAGE-MID SEC--Z27 ELECTRICAL	A1
-10920	-17, -18, -19	1 EA		" " " " " " "	
-10920	-13	2		" " " " " " "	
-10921	-11,-15,-17,-19	2 EA		GUSSET-ASCENT STAGE-MID SEC--Z27 ELECTRICAL	A1
-10921	-13	1		" " " " " " "	
↓ -10925	-11,-12,-13,-15,-17	1 EA	↓	ANGLE-ASCENT STAGE-MID SEC--Z27 ELECTRICAL	A2
LDW 280-10925	-19	2	LDW280-28325	" " " " " " "	

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS PROVIDED FOR TM-2A|R

DESCRIPTION OF EO: FOR * ADDED TM-2A|R REQUIREMENTS.

GAEC EO RELEASE: LE 105

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		TM-2A|R (60)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS									
✓		NOT	REQ'D	APPROVED BY					9-28-66		
				DATE	9/28/66					10-5-66	10/3/66
REVISE DWG	RECORD EO	REWORK	SCRAP		VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY: C
DRAWING TITLE: NOTED
~~DRAWING~~ EO NO. LEO 280-
EO NO. 288

ISSUED BY J J FISCH
SECTION VDI
GROUP NO. 335 PL 35

01 NAS 9-1100

LDW280-10919 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28325	TM-2A/R	4EA
LM	LDW280-28325	LM-2(32)	4EA
LM	LDW280-28325	LM-1(31)	4EA
LM	LDW280-28325	LTA-8(18)	4EA
PART NO. LDW280-10919-15&-17		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28325	LM-2(32)	1EA
LM	LDW280-28325	LM-1(31)	1EA
LM	LDW280-28325	LTA-8(18)	1EA
PART NO. LDW280-10919-13&-14		GAEC SCH NO.	

LM	LDW280-28325	LM-2(32)	2EA
↕	↕	LM-1(31)	2EA
		LTA-8(18)	2EA
LM	LDW280-28325	TM-2A/R	2EA
PART NO. LDW280-10919-19			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28325	LM-2(32)	2EA
LM	LDW280-28325	LM-1(31)	2EA
LM	LDW280-28325	LTA-8(18)	2EA
PART NO. LDW280-10919-11		GAEC SCH NO.	

WORK PKG FUNCTION*110 3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO		
		PRIM NO.	J.K.(001	
LAST DASH NO. USED	-19	215	mP-6	2-20-7

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.010 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM
DOCUMENTATION TYPE II

DRAWN BY	BERLINQUETTE 4-3-66		
LAYOUT BY			
CHECKED BY	ACA		
GRP LDR	W.TRAUT 4-2-66		
STRUCT	W.BISCHOFF 4-4-66		
STRUCT	R.HILDERMAN 4-4-66	PROJ ENGR	J.ALBER 4-6-66
WEIGHTS	D.ROBESCH 4-6-66	REL GROUP	C.BOTTI 4-8-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

GUSSET
ASCENTSTAGE-MID SECTION-Z27-
ELECTRICAL

SIZE	CODE IDENT NO.		
B	26512	LDW280-10919	A
SCALE	NONE	SHEET 1.00 OF 4	

SUPERSEDES LDW280-10919 N/C 4-3-66.

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED N/C LAST REV N/C ADDED SH 1.10, 2.00 & 3.00 R.E.KINGSBURY 2-10-67						
A	1	1.00, 1.10						LEO280-288 Ⓓ	IN MOD BLK FOR -15, 17 & -19 ADDED TM-2A/R REQUIREMENTS Rev	NOTED	NOT	REQD	K'BURY 2-16-67	☒	☒

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-10919
A
SCALE NONE
SHEET 1.10

ENG 77.3 5-65

01 NAS 9-1100

QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	LDW280-10919-19	E		GUSSET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040×3×4	NONE	88	
	-17			GUSSET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040×2×3			
	-15			GUSSET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040×3×3			
	-14			TEE	AL ALLOY EXTR	QQ-A-200/11	7075-T6511	DIE #65332×2 3/4			
	-13			TEE	AL ALLOY EXTR	QQ-A-200/11	7075-T6511	DIE #65332×2 3/4			
	LDW280-10919-11	E		TEE	AL ALLOY EXTR	QQ-A-200/11	7075-T6511	DIE #65332×2 3/4	NONE	88	

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	GSS 9.030M						

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10919	A

SCALE NONE

SHEET 2.00

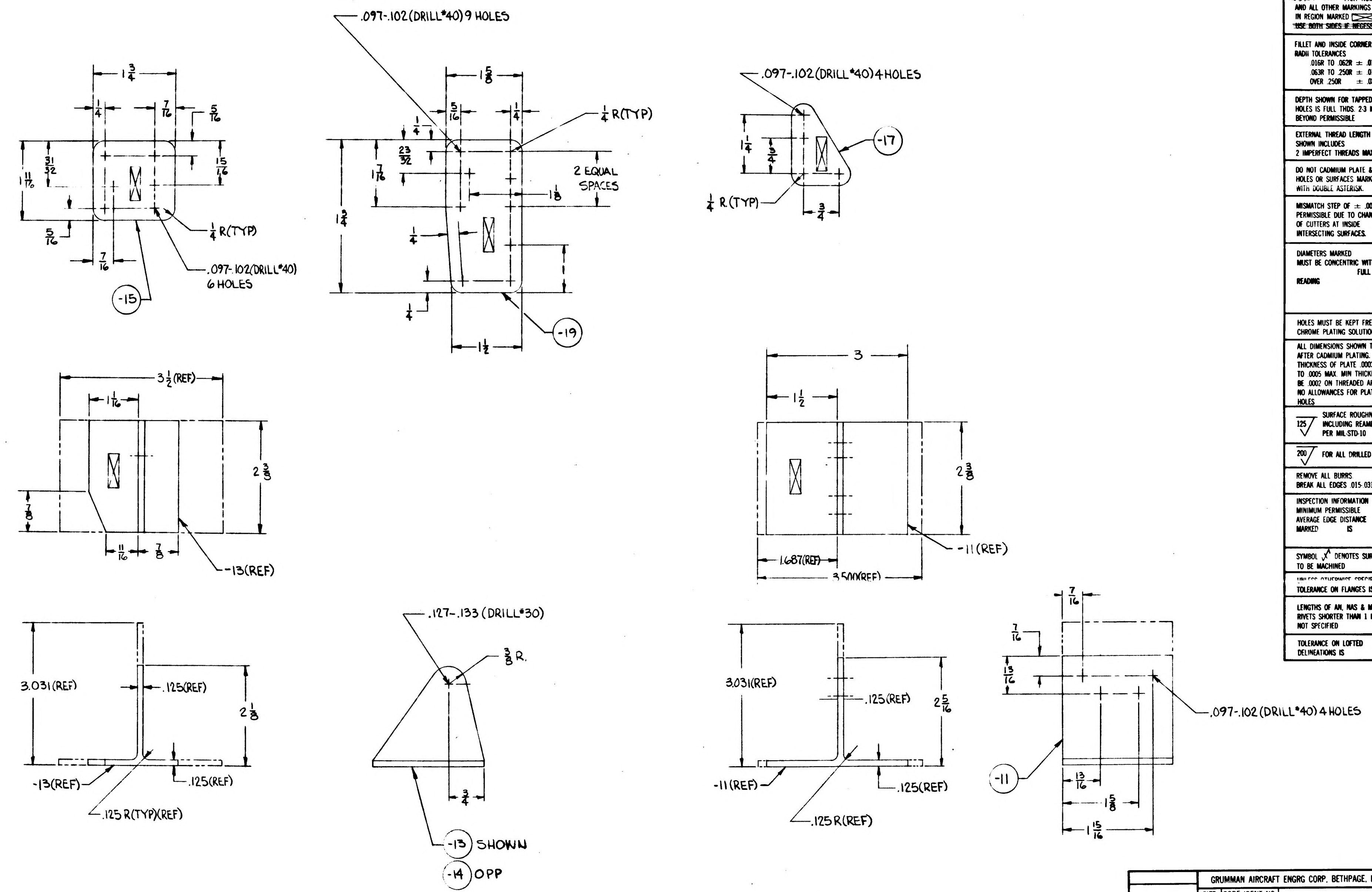
ENG 77.2 5-64

01

NAS 9-1100

LDW280-10919A

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.


.097-.102 (DRILL #40) 9 HOLES
.097-.102 (DRILL #40) 4 HOLES
.097-.102 (DRILL #40) 6 HOLES
$\frac{1}{4}$ R (TYP)
2 EQUAL SPACES
-15
-17
-19
$3\frac{1}{2}$ (REF)
3
-13 (REF)
-11 (REF)
1.687 (REF)
3.500 (REF)
3.031 (REF)
.125 (REF)
.125 R (TYP) (REF)
.125 R (REF)
.127-.133 (DRILL #30)
$\frac{3}{8}$ R.
-13 SHOWN
-14 OPP
-11

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

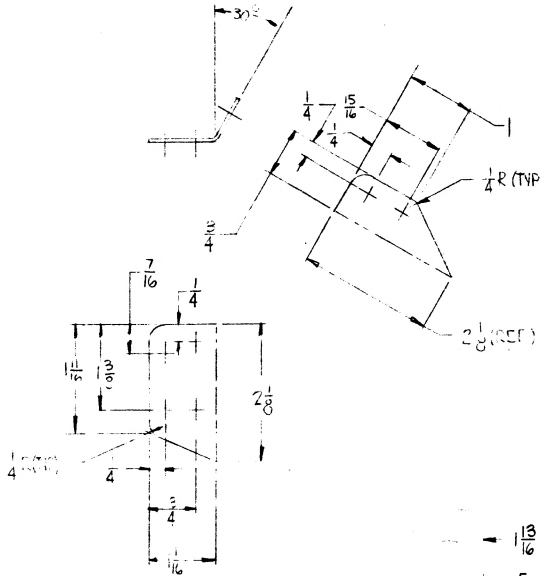
	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
LM	SIZE D	CODE IDENT NO. 26512	LDW280-10919	A
MODEL OR END ITEM	SCALE FULL		SHEET	

LDW280-10919 A

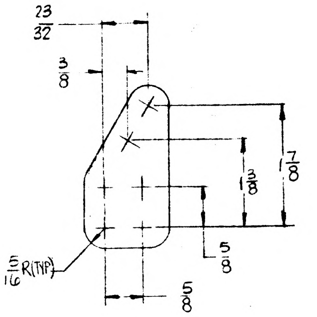
01 NAS 9-1100

01/03

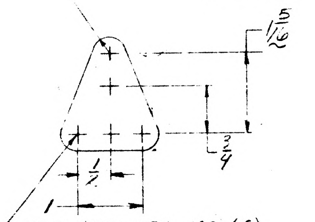
NAS 9-1100


30°
1/4
15/16
1/4
1/4 R (TYP)
3/4
2 1/8 (REF)
7/16
1/4
1 11/16
1 3/8
2 1/8
1/4 R(TYP)
1/4
3/4
1 1/16

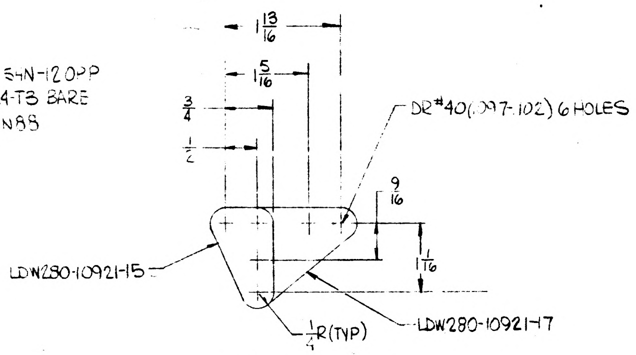
LDW280-10925-11 SHN-12 OPP
.040 AL ALY SH~2024-T3 BARE
QQ-A-355~1/8 BR~FIN 88
1 EA REQD/MOD


23/32
3/8
1 7/8
1 3/8
5/8
5/16 R(TYP)
5/8

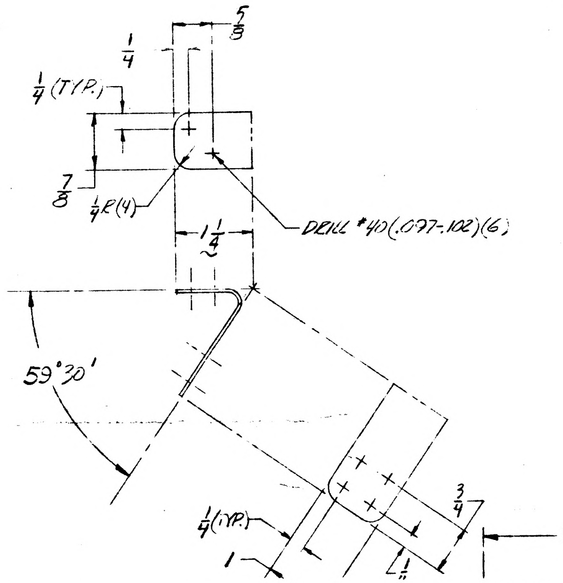
LDW280-10921-19
.040 AL ALY SH~2024-T3 BARE
QQ-A-355~FIN 88~2 REQD/MOD


1/4 R (3)
1 5/16
3/4
1/2
1

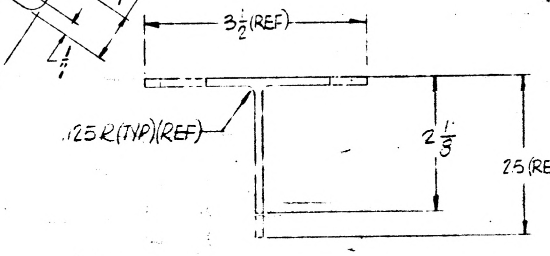
DRILL #40(.097-.102)(5)
LDW280-10921-11 GUSSET
.040 AL ALLOY SH~2024-T3~BARE
QQ-A-355~H.T. NONE~FINISH #88
2 REQD / MODULE

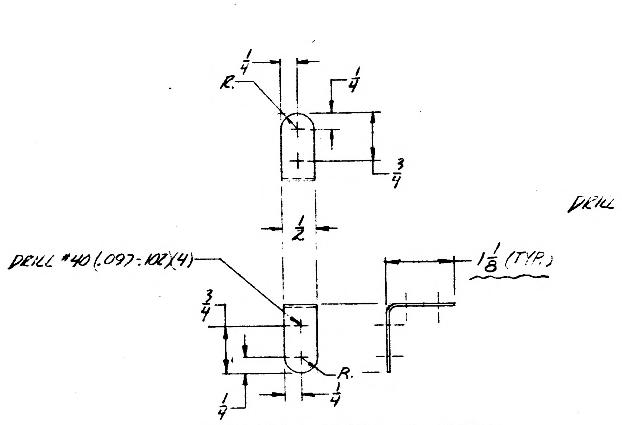

1 13/16
1 5/16
3/4
1/2
DR #40(.097-.102) 6 HOLES
9/16
1 1/16
LDW280-10921-15
1/4 R(TYP)
LDW280-10921-17

LDW280-10921-15 &-17
.040 AL ALY SH~2024-T3 BARE
QQ-A-355~FIN 88~2 EA REQD/MOD

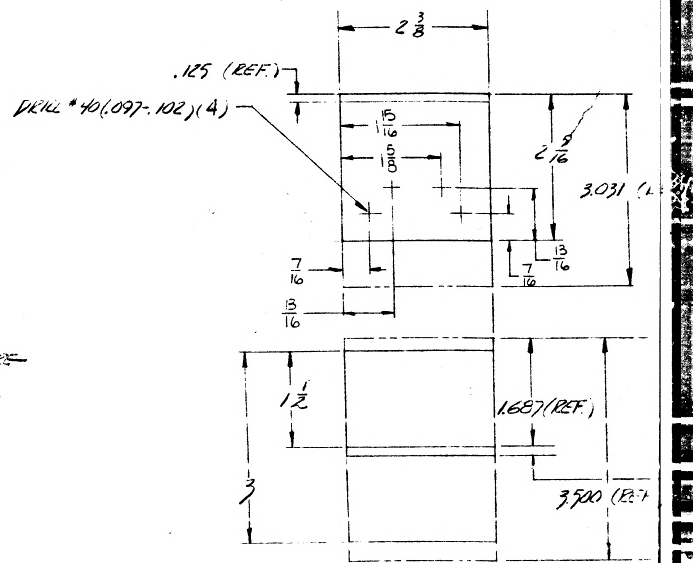

5/8
1/4
1/4 (TYP.)
7/8
1/4 R(4)
DRILL #40(.097-.102)(6)
1 1/4
59°30'
3/4
1/4 (TYP.)
1
1/4

LDW280-10920-17 CLIP (SHN)
-16 CLIP (OPP)
.040 AL ALLOY SH~2024-T3~BARE
QQ-A-355~H.T. NONE~E.R. 5/32
FINISH #88 ~ 1 EA REQD / MODULE

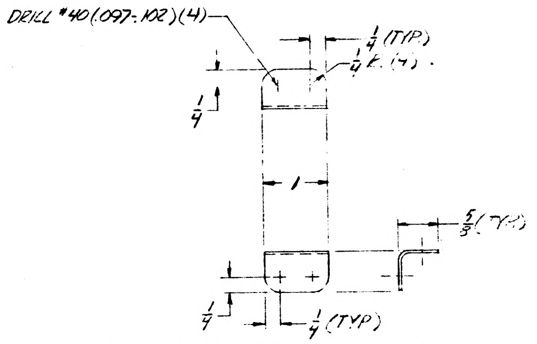

3 1/2 (REF)
.125 R(TYP)(REF)
2 1/8
2.5 (REF)


1/4
R.
1/4
3/4
1/2
DRILL #40(.097-.102)(4)
1 1/8 (TYP.)
3/4
R.
1/4
1/4

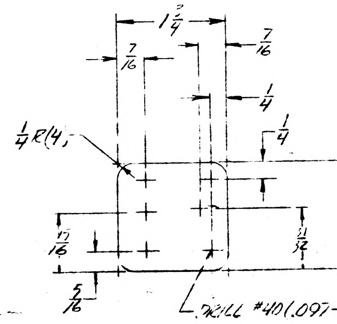
LDW280-10920-13 CLIP
.040 AL ALLOY SH~2024-T3~BARE
QQ-A-355~H.T. NONE~B.R. 1/8
FINISH #88 ~ 2 REQD / MODULE


2 3/8
.125 (REF.)
DRILL #40(.097-.102)(4)
15/16
5/8
1 3/8
2 5/16
3.031
7/16
13/16
7/16
13/16
1 1/2
1.687 (REF.)
3
3.500 (REF)

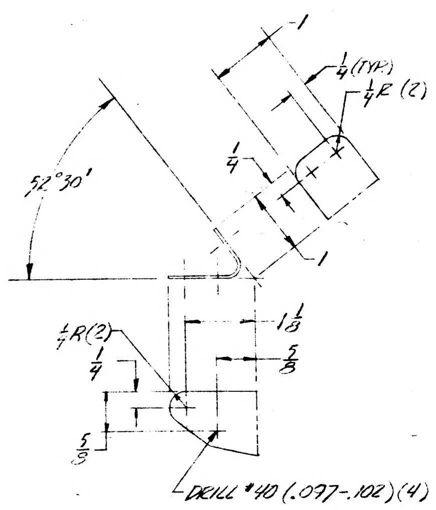
LDW280-10919-11 TEE
MAKE FROM DIE #65332
AL ALLOY EXTR. 7075-T6511
FINISH #88 ~ 2 REQD / MODULE


DRILL #40(.097-.102)(4)
1/4 (TYP.)
1/4 R.(4)
1/4
1
5/8 (TYP.)
1/4
1/4 (TYP)

LDW280-10920-11 CLIP
.040 AL ALLOY SH~2024-T3~BARE
QQ-A-355~H.T. NONE~B.R. 1/8
FINISH #88 ~ 1 REQD / MODULE

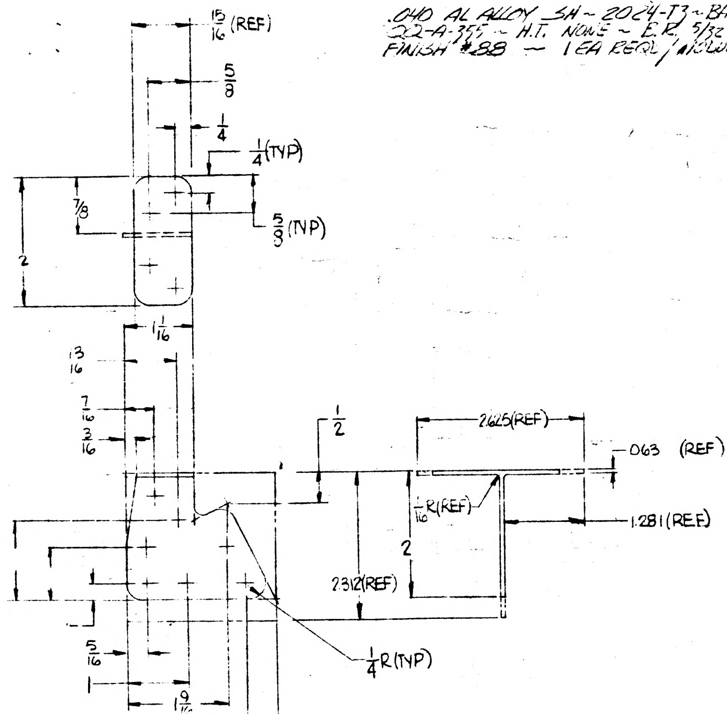

1 3/4
7/16
7/16
1/4
1/4
1/4 R(4)
1 11/16
15/16
21/32
5/16
DRILL #40(.097-.102)(6)

LDW280-10919-15 GUSSET
.040 AL ALLOY SH~2024-T3~BARE
QQ-A-355~H.T. NONE~FINISH #88
4 REQD / MODULE

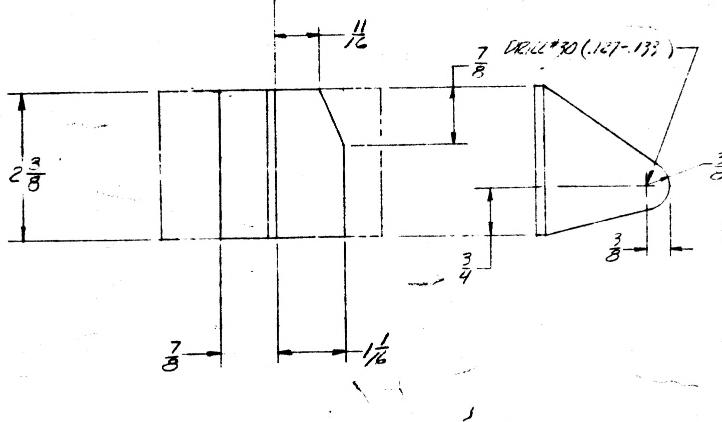

1
1/4 (TYP)
1/4 R (2)
52°30'
1/4
1
1/4 R(2)
1/4
1 1/8
5/8
5/8

DRILL #40 (.097-.102)(4)

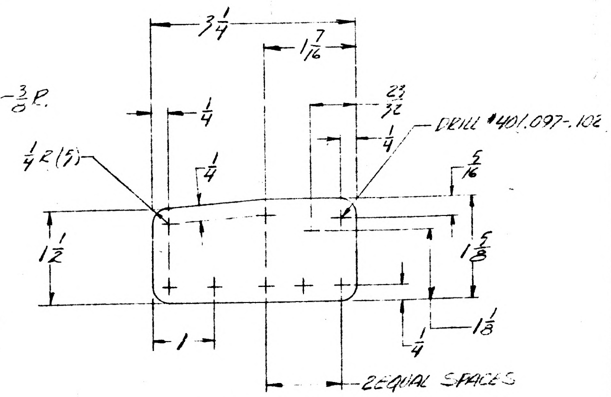
LDW280-10920-19 CLIP
.040 AL ALLOY SH~2024-T3 BARE
QQ-A-355~H.T. NONE~E.R. 5/32
FINISH #88 ~ 1 REQD / MODULE


15/16 (REF)
5/8
1/4
1/4 (TYP)
7/8
2
5/8 (TYP)
1 1/16
13/16
7/16
3/16
1/2
.2625 (REF)
.063 (REF)
1/16 R(REF)
1.281 (REF)
2
2.312 (REF)
1/4 R(TYP)
5/16
1
1 9/16
1 7/8
2 3/8

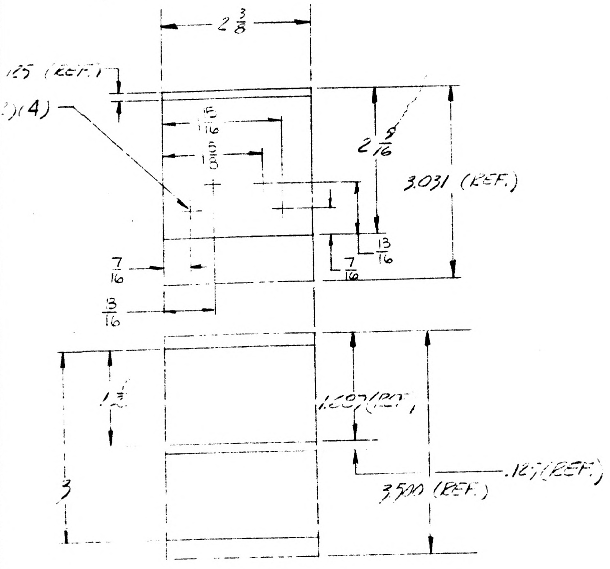
LDW280-10920-15 SHN-16 OPP
MAKE FROM 89V1074 ~ AL ALY EXTR
2024-T6511 FIN 88~1 EA REQD/MOD


11/16
7/8
DRILL #30 (.127-.132)
2 3/8
3/8 R.
3/4
3/8
7/8
1 1/16

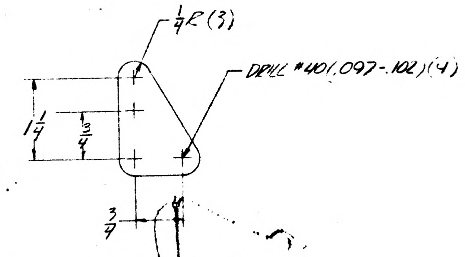
LDW280-10919-13 SHN-14 OPP
MAKE FROM 89V1134
AL ALLOY EXTR. ~ 7075-T6511
FINISH #88 ~ 1 EA REQD / MODULE


3 1/4
1 7/16
1/4
23/32
DRILL #40(.097-.102
1/4
1/4 R(5)
1/4
5/16
1 1/2
1 5/8
1 1/8
1/4
1
2 EQUAL SPACES

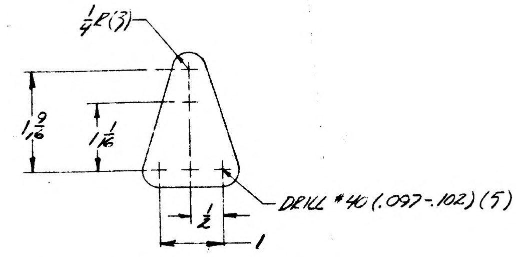
LDW280-10919-19 GUSSET
.040 AL ALLOY SH~2024-T3~BARE
QQ-A-355~H.T. NONE~FINISH #88
2 REQD / MODULE


2 3/8
.125 (REF.)
(4)
2 5/16
3.031 (REF.)
7/16
13/16
1 3/4
1.687 (REF.)
3
3.500 (REF.)
.125 (REF.)

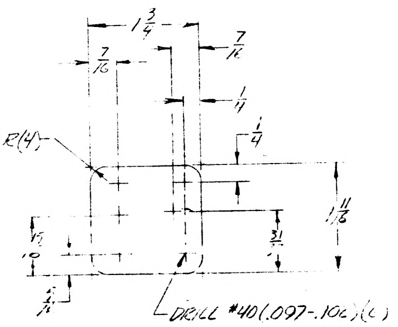
LDW280-10919-11 TEE
MAKE FROM DIE #65[illegible]C
AL ALLOY EXTR. 7075-T6511
FINISH #88 ~ 2 REQD/MODULE


1/4R (3)
DRILL #40 (.097-.102) (4)
1 1/4
3/4
3/4

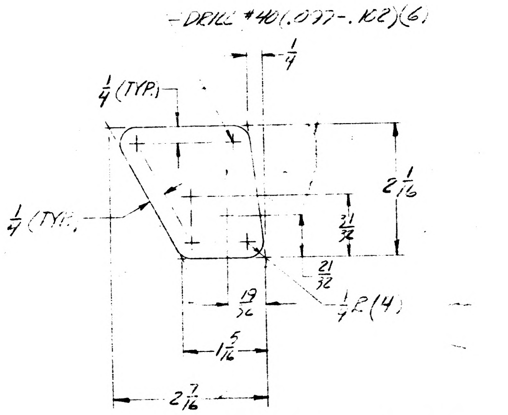
LDW280-10919-17 GUSSET
.040 AL ALLOY SH ~ 2024-T3
BARE ~ QQ-A-355 ~ H.T. NONE
FINISH #88 ~ 4 REQD/MODULE


1/4R (3)
1 9/16
1 1/16
DRILL #40 (.097-.102) (5)
1/2
1

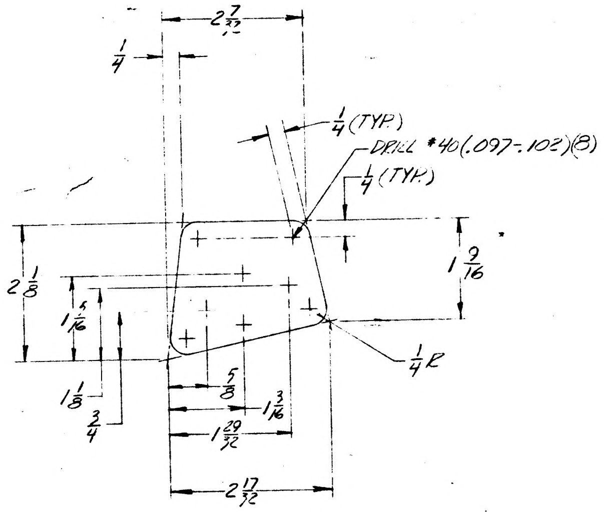
LDW280-10916-15 GUSSET
.040 AL ALLOY SH ~ 2024-T3 ~ BARE
QQ-A-355 ~ H.T. NONE ~ FINISH #88
1 REQD/MODULE


1 3/4
7/16
7/16
1/4
1/4
1/4R (4)
1 1/16
31/32
DRILL #40 (.097-.102) (6)

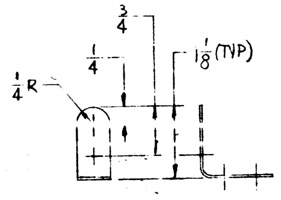
LDW280-10919-15 GUSSET
.040 AL ALLOY SH ~ 2024-T3 ~ BARE
QQ-A-355 ~ H.T. NONE ~ FINISH #88
4 REQD/MODULE


DRILL #40 (.097-.102) (6)
1/4
1/4 (TYP.)
1/4 (TYP.)
2 1/16
21/32
21/32
1/4R (4)
19/32
1 5/16
2 7/16

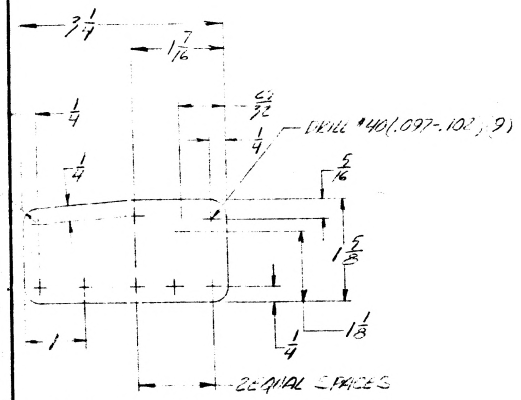
LDW280-10916-19 GUSSET
.040 AL ALLOY SH ~ 2024-T3 ~ BARE
QQ-A-355 ~ H.T. NONE ~ FINISH #88
2 REQD/MODULE


2 7/32
1/4
1/4 (TYP)
DRILL #40 (.097-.102) (8)
1/4 (TYP)
2 1/8
1 9/16
1 1/16
1/4R
1 3/8
3/4
5/8
1 3/16
1 29/32
2 17/32

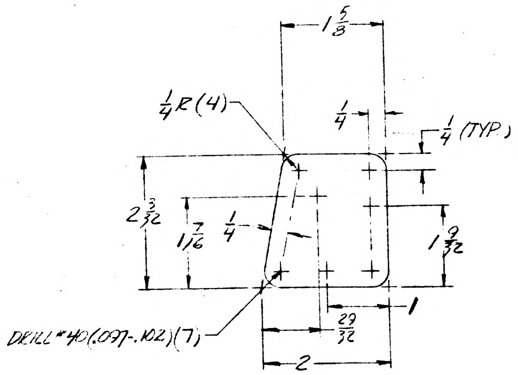
LDW280-10916-13 GUSSET
.040 AL ALLOY SH ~ 2024-T3 ~ BARE
QQ-A-355 ~ H.T. NONE ~ FINISH #88
2 REQD/MODULE


3/4
1/4
1 1/8 (TYP)
1/4R

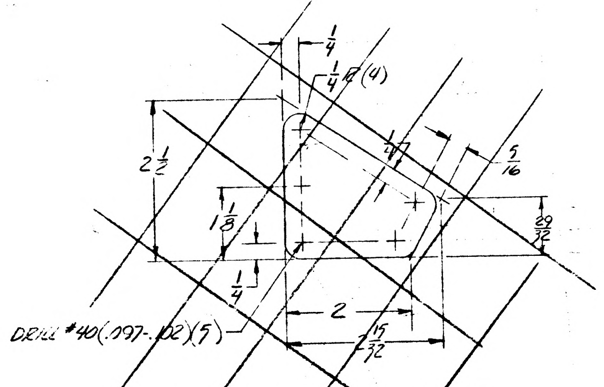
LDW280-10925-17
.032 AL ALY SH ~ 2024-T3 BARE
QQ-A-355 ~ FIN 88 ~ 1/8BR ~ 1 REQD/MOD


3 1/4
1 7/16
1/4
DRILL #40 (.097-.102) (9)
21/32
1/4
5/16
1/4
1 5/8
1
1 1/8
1/4
2 EQUAL SPACES

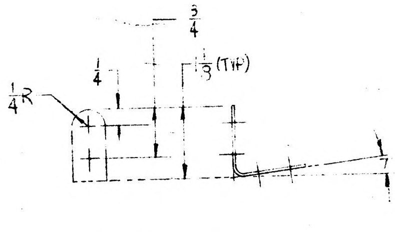
LDW280-10919-19 GUSSET
.040 AL ALLOY SH ~ 2024-T3 ~ BARE
QQ-A-355 ~ H.T. NONE ~ FINISH #88
2 REQD/MODULE


1 5/8
1/4R (4)
1/4
1/4 (TYP)
2 3/32
1 7/16
1/4
1 9/32
DRILL #40 (.097-.102) (7)
1
29/32
2

LDW280-10916-17 GUSSET
.040 AL ALLOY SH ~ 2024-T3 ~ BARE
QQ-A-355 ~ H.T. NONE ~ FINISH #88
1 REQD/MODULE


1/4
1/4R (4)
2 1/2
1 1/8
5/16
29/32
DRILL #40 (.097-.102) (5)
1/4
2
2 15/32

LDW280-10916-11 GUSSET
.040 AL ALLOY SH ~ 2024-T3
BARE ~ QQ-A-355 ~ H.T. NONE
FINISH #88 ~ 4 REQD/MODULE


3/4
1/4
1 1/8 (TYP)
1/4R

LDW280-10925-15
.032 AL ALY SH ~ 2024-T3 BARE
QQ-A-355 ~ FIN 88 ~ 1/8BR ~ 1 REQD/MOD

02/03 NAS 9-1100

NO.	FINISHES	GRUMMAN STD SPEC	MILIT SPEC
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	[redacted] LSPN-1930	

SYM	PROCESSES	GRUMMAN STD SPEC	MILIT SPEC
	AL HEAT TREAT		MIL-H-60
	MAGNAFLUX		MIL-I-686
	PENETRANT INSPECTION (ZYGLO)		MIL-I-686
	THREADING		MIL-S-77
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

MANUFACTURING OPERATIONS

NOTES CHECKED ✓ APPLY TO THIS DWG.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.

REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.

125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.

200 √ FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▨ USE BOTH SIDES IF NECESSARY.

FILLET AND INSIDE CORNER RADII TOLERANCES
.016R TO .062R ± .010
.063R TO .250R ± .015
OVER .250R ± .030

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.

MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CENTERS AT INSIDE INTERSECTING SURFACES.

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS

SYMBOL ƒ DENOTES SURFACE TO BE MACHINED

UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	LSP14-9030	

RECORD DRAWINGS AND E.O'S

MODEL	RECORD DWG NO.	E. O. NO.	MILITARY NO.	APL NO.

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

REVISIONS

REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY / DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER IBCC NO.	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MILITARY NUMBER	DISPOSITION OF EXIST PARTS: RE-WORK	SCRAP	ENGRG APPD	GOVT APPD

DWG. SIZE 34 X

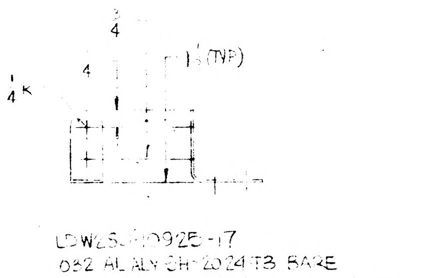
PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X) SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) SQ. FT.

PRINT TRIM LINE

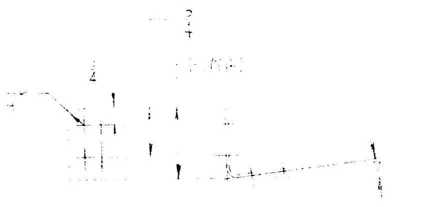
MANUFACTURING OPERATIONS

NOTES CHECKED √ APPLY TO THIS DWG.

- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.
- 125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.
- 200 FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL ∱ DENOTES SURFACE TO BE MACHINED ✓
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.



LDW280-10925-17
.032 AL ALY SH~2024-T3 BARE
QQ-A-355~FIN 88~1/8BR~1 REQD/MOD



LDW280-10925-15
.032 AL ALY SH~2024-T3 BARE
QQ-A-355~FIN 88~1/8BR~1 REQD/MOD

NOTES —

1. ALL INFORMATION PERTAINING TO THE FOLLOWING DRAWINGS ARE FOR REFERENCE PURPOSES ONLY —

LDW280-28325
LDW280-10916
LDW280-10917
LDW280-10918

LDW280-10919
LDW280-10921
LDW280-10925

THE NEXT ASSY, NO REQD/MODULE & EFFECTIVITY FOR THE ABOVE DRAWINGS ARE AS FOLLOWS —

LDW280-28325-1, N.A.~LDW280-28019; EFFECTIVITY~LTA-8(18), LEM-1(31), LEM-2(32), NO REQD/MODULE ~ 1 OF -1
LDW280-10916 -13,-15,-17&-19, N.A.~LDW280-28325, EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32), NO REQD/MODULE ~ SEE F/D.
LDW280-10917-11,-13,-14,-15,-17-18&-19, N.A.~LDW280-28325 EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32), NO REQD/MODULE ~ SEE F/D.
LDW280-10919-11,-13,-15,-17,-18,-19&-20, N.A.~LDW280-28325 EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32); NO REQD/MODULE ~ SEE F/D
LDW280-10918-11,-13,-14,-15,-17,-18,-19, N.A.~LDW280-28325, EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32); NO REQD/MODULE ~ SEE F/D
LDW280-10920-11,-13,-15,-16,-17,-18&-19, N.A.~LDW280-28325 EFFECTIVITY~LTA-8(18), LEM-1(31), & LEM-2(32), NO REQD/MODULE ~ SEE F/D.
LDW280-10921-11,-13,-15,-17&-19, N.A.~LDW280-28325 EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32), NO REQD/MODULE ~ SEE F/D
LDW280-10925-11,-12,-13,-15,-17&-19 N.A.~LDW280-28325 EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32) NO REQD/MODULE ~ SEE F/D

03/03 NAS 9-1100

I & T EXEMPT

QTY REQD PER ASSY			PART OR IDENTIFYING NO.	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE

LEM	NOTED	LTA-8(18), LEM-1(31)-2(32)		NOTED
MODEL	NEXT ASSY	MODULE [redacted]		REQD PER APL
PART NUMBER			GRUMMAN SCH INFO 325	

TO BE REDRAWN ON PRODUCTION FORMAT

3

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED: FRACTIONS - DECIMALS - ANGLES	± 1/32 ± .010 ± 0° 30'
ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	
GRUMMAN REL&INFO	
PR-1 215	LE(001) WP12

DRAWN BY	BERLINQUETTE 4-3-66
LAYOUT BY	
CHECKED BY	VDI
GR LEADER	W Traut 4/2/66
STRUCTURE	
WEIGHTS	
PROJ ENGR	4-6-66
GOVT APPD	4-8-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

CLIP~ASCENT STAGE
MID-SECT ~ -Z27 ELECTRICAL

CONTRACT NO

CODE IDENT NO.	SIZE	
26512	J	LDW280-10920
SCALE FULL		SHEET 1

LINE ITEM #1 DOCUMENTATION TYPE II

LDW280-10920

LDW280-10920

ENG 32.1 REV 3-65

*

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

~~DWG~~ E NO. LEO 280
EO NO. 288
CONTROL INFO NO. LDW280A0749

ADD TM-2A|R EFFECTIVITY TO THE FOLLOWING DWGS.

DWG NO.	DASH NO *	NO. REQ'D	N/A	TITLE	CHANGE NO.
✓ LDW280-10916	-13,-19	2 EA	LDW280-28325	GUSSET-ASCENT STAGE-MID SEC -Z27 ELECTRICAL	A1
-10916	-15,-17	1 EA		" " " " " "	
✓ -10917	-11,-19	2 EA		CHANNEL-ASCENT STAGE-MID SEC--Z27 ELECTRICAL	A3
-10917	-13,-14,-15,-17,-18	1 EA			
✓ -10918	-11,-13,-17,-18	1 EA			A5
-10918	-19,-20,-15	1 EA		CHANNEL-ASCENT STAGE-MID SEC--Z27 ELECTRICAL	
✓ -10919	-15,-17	4 EA		GUSSET-ASCENT STAGE-MID SEC--Z27 ELECTRICAL	A1
-10919	-19	2		" " " " " " "	
✓ -10920	-11,-15,-16	1 EA		CLIP-ASCENT STAGE-MID SEC--Z27 ELECTRICAL	A1
-10920	-17,-18,-19	1 EA		" " " " " " "	
-10920	-13	2		" " " " " " "	
-10921	-11,-15,-17,-19	2 EA		GUSSET-ASCENT STAGE-MID SEC--Z27 ELECTRICAL	A1
-10921	-13	1		" " " " " " "	
-10925	-11,-12,-13,-15,-17	1 EA		ANGLE-ASCENT STAGE-MID SEC--Z27 ELECTRICAL	A2
LDW280-10925	-19	2	LDW280-28325	" " " " " " "	

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

3

REASON FOR EO: ADDITIONAL REQUIREMENTS PROVIDED FOR TM-2A|R

DESCRIPTION OF EO: FOR * ADDED TM-2A|R REQUIREMENTS.

GAEC C EO RELEASE: LE 10-5

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		TM-2A|R (60)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY				—	9-28-66		RMC	
DATE	9/28/66			—			10-5-66	10/3/66
	VDI							

PRIORITY: C

DRAWING TITLE: NOTED

~~DRAWING~~ EO NO.: LEO 280-

EO NO.: 288

ISSUED BY J J FISCH SECTION VDI GROUP NO. 335 PL 35

01

NAS 9-1100

LDW280-10921 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28325	TM-2A/R	1
LM	LDW280-28325	LM-2(32)	1
LM	LDW280-28325	LM-1(31)	1
LM	LDW280-28325	LTA-8(18)	1
PART NO. LDW280-10921-13		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28325	TM-2A/R	2 EA
LM	LDW280-28325	LM-2(32)	2 EA
LM	LDW280-28325	LM-1(31)	2 EA
LM	LDW280-28325	LTA-8(18)	2 EA
PART NO. LDW280-10921-11,-15-17¢-19		GAEC SCH NO. 32	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

WORK PKG FUNCTION NO 110 5

SH REV STATUS. FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00			2.00			3.00		
REV	A			A			A		
SHEET	1.10								
REV	A								
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO	
LAST DASH NO. USED	-19	PRIM NO. 215	JK(001) mp-5A-4/19/

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.010 ±0°30′

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS-9-1100
LINE ITEM
DOCUMENTATION TYPE II

DRAWN BY	BERLINQUETTE 4-3-66		
LAYOUT BY			
CHECKED BY			
GR LDR	W TRAUT 4-2-66		
VDI	W. BISCHOFF 4-4-66		
		PROJ ENGR	J ALBER RC 4-6-66
STRUCTURES	HILDERMAN 4-4-66	REL GROUP	BOTTI 4-8-66
WEIGHTS	ROBESCH DJL 4-6-66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

GUSSET
ASCENT STAGE-MID-SECT-Z27-ELECTRICAL

SIZE B
CODE IDENT NO. 26512
LDW280-10921 A Ⓐ
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-10921 REV N.C. 4-8-66

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHG LAST REV NC A. ANDRIANI 5-16-67						
A	1	1.00 1.10				✓		LEO 280-288	ADDED SHEET 1.10 FOR -11, -13, -15, -17 & -19 ADDED TM-2A/R REQUIREMENTS	TM-2A/R(6)	NOT	REQD	ANDRIANI 5-16-67	☒	☒

FOR CONTINUATION OF REVISIONS SEE SHEET

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10921	A
SCALE	NONE		SHEET 1.10

(A)

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10921-19	E	GUSSET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040X 2X3	NONE	88	
		LDW280-10921-17	E	↑	↑	↑	↑	.040X 2X3	↑	↑	
		LDW280-10921-15	E					.040X 2 X 2			
		LDW280-10921-13	E	↓	↓	↓	↓	.040X 4 X10	↓	↓	
		LDW280-10921-11	E	GUSSET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040X 2X3	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10921	A

SCALE NONE

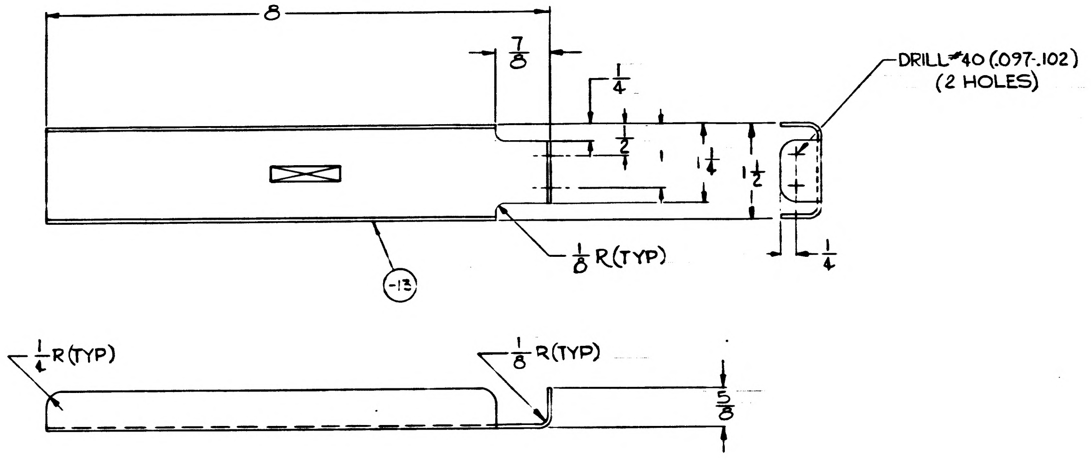
SHEET 2.00

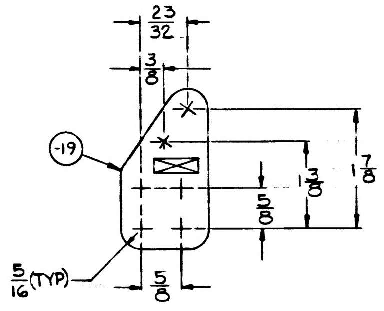
ENG 77.2 7-65

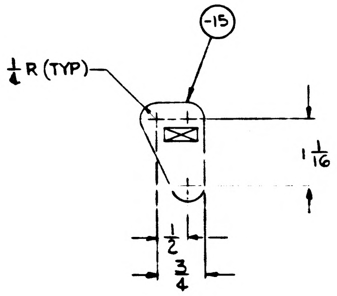
01

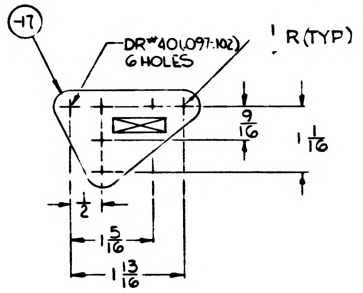
NAS 9-1100

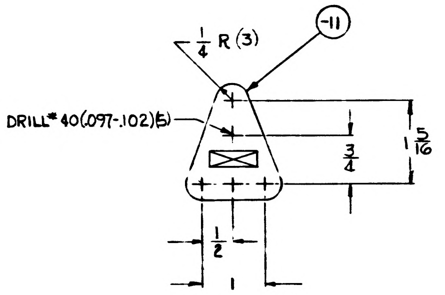
LDW280-10921 A


8
7/8
1/4
1/2
1
1 1/4
1 1/2
DRILL #40 (.097-.102) (2 HOLES)
1/4
1/8 R(TYP)
-13
1/4 R(TYP)
1/8 R(TYP)
5/8


23/32
3/8
-19
1 3/8
1 7/8
5/8
5/16 (TYP)
5/8


-15
1/4 R (TYP)
1 1/16
1/2
3/4


-17
DR #40 (.097-.102) 6 HOLES
R (TYP)
9/16
1 1/16
1/2
1 5/16
1 13/16


1/4 R (3)
-11
DRILL #40 (.097-.102)(5)
3/4
1 5/16
1/2
1

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .000 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.030	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
	SIZE D	CODE IDENT NO. 26512	LDW280-10921	A
LM				
MODEL OR END ITEM	SCALE FULL		SHEET 3.0C	

01 NAS 9-1100

LDW280-10922

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28333	LM-2(32)	1 EA
LM	LDW280-28333	LM-1(31)	1 EA
LM	LDW280-28333	LTA8(18)	1 EA

PART NO. LDW280-10922-11,-13,-15,-17,&-19
GAEC SCH NO. 32

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A			A				

LAST SECT LTR USED
LAST DASH NO. USED -19

GRUMMAN REL INFO A
PRIM NO. 215
4E(001)
MP-14
A-1-13-7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.010 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY DI MARCO 4/7/66
LAYOUT BY DI MARCO 4/7/66
CHECKED BY
GR LEADER W. TRAUT 4/7/66
EH DES INT W. BISCHOFF 4/7
STRUCTURES R. HILDERMAN 4/
STRUCTURES
WEIGHTS D. ROBESCH
PROJ ENGR J. ALBER 4/12
REL GROUP C. BOTTI 4/12

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT
ASCENT STAGE-MID SECTION
-Z 27 BULKHEAD PIPING

SIZE B
CODE IDENT NO. 26512
LDW280-10922 A
SCALE NONE
SHEET 1.00 OF 3

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-10922 NO CHANGE 11-23-66

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED NO CHG LAST REV NO CHG T.JESAITIS/C.CASTELLANO ADDED SHEETS 1.10, 2.00 & 3.00 11-23-66						
A	1	1.00, 1.10 & 3.00						EO A-1	ON-11 6 11/32 DIM WAS 6 7/16 ADDED 1/4 DIM & 9/16 DIM	LTA-8, LM 1 & 2	✓		J.ESAITIS 11-23-66	☒	☒
	2	1.10 & 3.00							ON-11 .097-.102 (#40 DRILL) 2 HOLES WAS DRILL #40 (3) (.097-.102 DIA) MS20470AD4 (3) ON INSTL.		NOT	REQD			
	3	1.10 & 3.00							ON-15 .097-.102 (#40 DRILL) TOTAL QTY. OF 5 WAS 6						
	4	1.10 & 3.00						①	ON-19 ADDED .097-.102 (#40 DRILL) CALLOUT				LL.	1-11-67	

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY				
A	~	R.W. Phillips 1-11-67 ES								

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

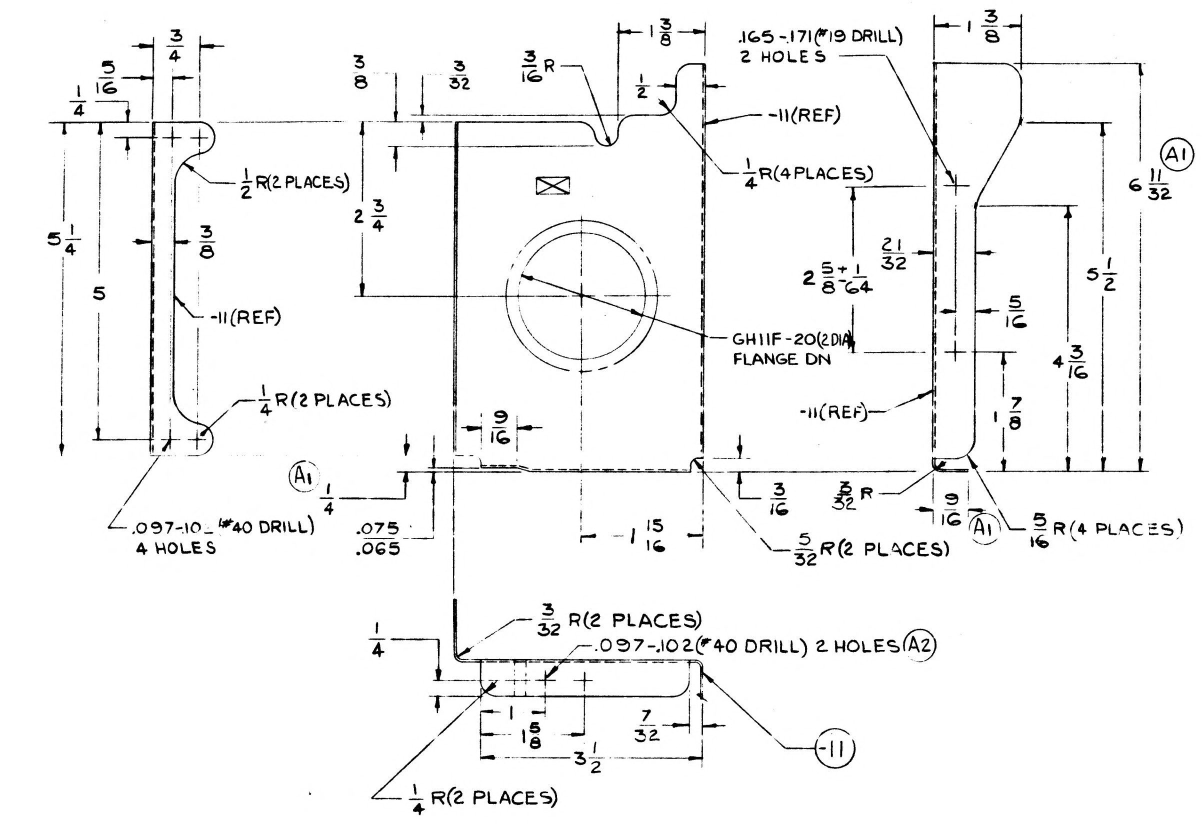
SIZE	CODE IDENT NO.		
B	26512	LDW280-10922	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

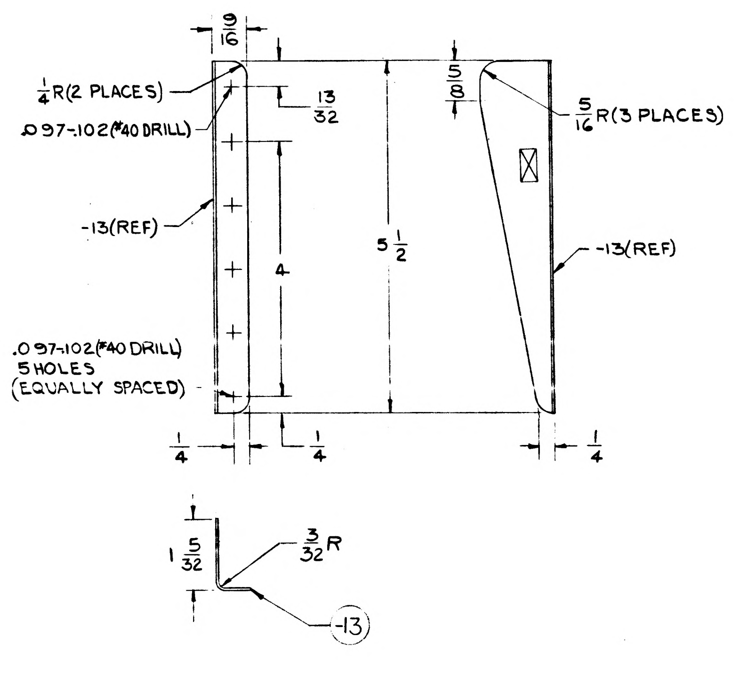
01 NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.

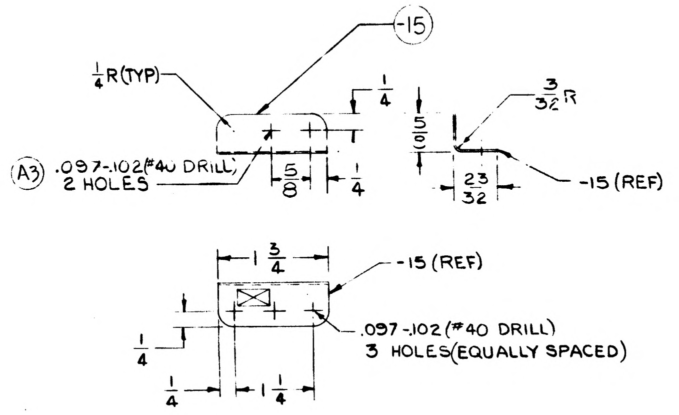
MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	



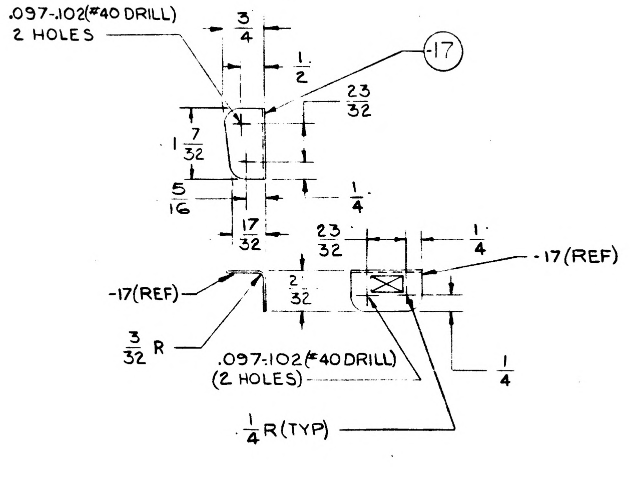
3/4
5/16
1/4
5 1/4
5
1/2 R(2 PLACES)
3/8
-11(REF)
1/4 R(2 PLACES)
.097-.102(#40 DRILL)
4 HOLES
3/8
3/32
3/16 R
1 3/8
1/2
.165-.171(#19 DRILL)
2 HOLES
-11(REF)
1/4 R(4 PLACES)
2 3/4
GH11F-20(2 DIA)
FLANGE DN
2 5/8 +1/64
21/32
5/16
-11(REF)
1 7/8
4 3/16
5 1/2
6 11/32
A1
1 3/8
9/16
A1
1/4
.075
.065
3/16
1 15/16
3/32 R
5/32 R(2 PLACES)
9/16
A1
5/16 R(4 PLACES)
1/4
3/32 R(2 PLACES)
.097-.102(#40 DRILL) 2 HOLES A2
1
1 5/8
3 1/2
7/32
-11
1/4 R(2 PLACES)



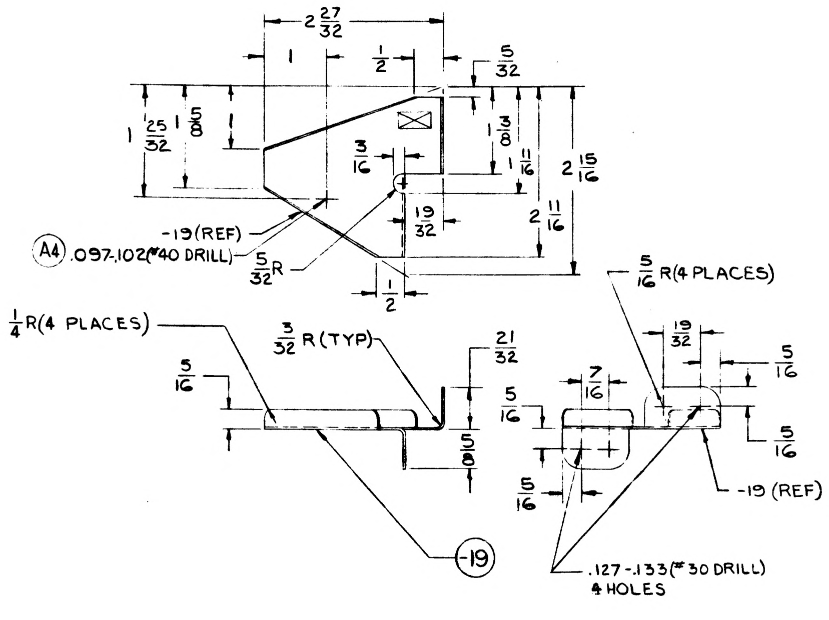
9/16
1/4 R(2 PLACES)
.097-.102(#40 DRILL)
13/32
5/8
5/16 R(3 PLACES)
-13(REF)
4
5 1/2
-13(REF)
.097-.102(#40 DRILL)
5 HOLES
(EQUALLY SPACED)
1/4
1/4
1/4
1 5/32
3/32 R
-13



-15
1/4 R(TYP)
1/4
A3
.097-.102(#40 DRILL)
2 HOLES
5/8
1/4
5/16
3/32 R
23/32
-15 (REF)
1 3/4
-15 (REF)
.097-.102(#40 DRILL)
3 HOLES(EQUALLY SPACED)
1/4
1/4
1 1/4



.097-.102(#40 DRILL)
2 HOLES
3/4
1/2
-17
23/32
1 7/32
5/16
1/4
17/32
23/32
1/4
-17(REF)
-17(REF)
2/32
3/32 R
.097-.102(#40 DRILL)
(2 HOLES)
1/4
1/4 R(TYP)



2 27/32
1
1/2
5/32
1 25/32
1 5/8
1 3/8
1 11/16
2 15/16
3/16
19/32
2 11/16
-19(REF)
A4
.097-.102(#40 DRILL)
5/32 R
1/2
5/16 R(4 PLACES)
1/4 R(4 PLACES)
3/32 R(TYP)
21/32
5/16
5/16
5/8
7/16
19/32
5/16
5/16
5/16
-19 (REF)
-19
.127-.133(#30 DRILL)
4 HOLES

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK	
SIZE E	CODE IDENT NO. 26512
LDW280-10922	A
LM MODEL OR END ITEM	SCALE FULL
SHEET 3	

LDW280-10922

LDW280-10923 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28333	LM-2(32)	1 EA
LM	LDW280-28333	LM-1(31)	1 EA
LM	LDW280-28333	LTA-8(18)	1 EA

PART NO. LDW280-10923-11,-13;17,-19&-21

GAEC SCH NO. 324

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -21

GRUMMAN REL INFO A

PRIM NO.	LE(001)		
215	HP-6	A-1-11-7	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.010 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 LINE ITEM I DOCUMENTATION TYPE II

DRAWN BY	DI MARCO/CAROLL 4/7/66	RELIABILITY	
LAYOUT BY	DI MARCO/CAROLL 4/7/66		
CHECKED BY	CNB		
GR LEADER	W. TRANT 4/7/66		
VEH DES INT	W. P BISCHOFF 4/7/66		
STRUCTURES	FEB 4/-/66	PROJ ENGR	J. ALLEN RNC 4/
STRUCTURES	R. HILDERMAN 4/7/66	REL GROUP	BOTTI 4/7
WEIGHTS	D. ROBESON 4/7		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT
ASCENT STAGE MID SECTION
-Z27 BULKHEAD PIPING

SIZE B CODE IDENT NO. 26512 LDW280-10923 A

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-10923 NO CHANGE 10-13-66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHG LAST REV NO CHG, C.CASTELLANO/JESAITIS 10-17-66 ADDED SHEETS 1.10, 2.00 & 3.00						
A	1	1.00, 1.10, 2 & 3						EO-A1	REMOVED LDW280-10923-15 ADDED LDW280-10923-21	LTA-8, LM-1&2		-15	JESAITIS		
	2	1.10 & 2						EO-A2	IN BM(ON-13) MATL 2024-0, HT T42 (WAS) 2024-T3 EG		✓		10-17-66		

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY	PROJ ENGR	REL GROUP			
A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10923	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10923-21	E	ANGLE	AL ALLOY SH	QQ-A-250/4	2024-T3	.032×3X7	NONE	88	
		-19		ANGLE			2024-T3	.032x3x4	NONE		
		-17		BRACKET			2024-T3	.036X7x7	NONE		
		-13		ANGLE			2024	.032X2X3	T42		
		LDW280-10923-11	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.032X4X7	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T42	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

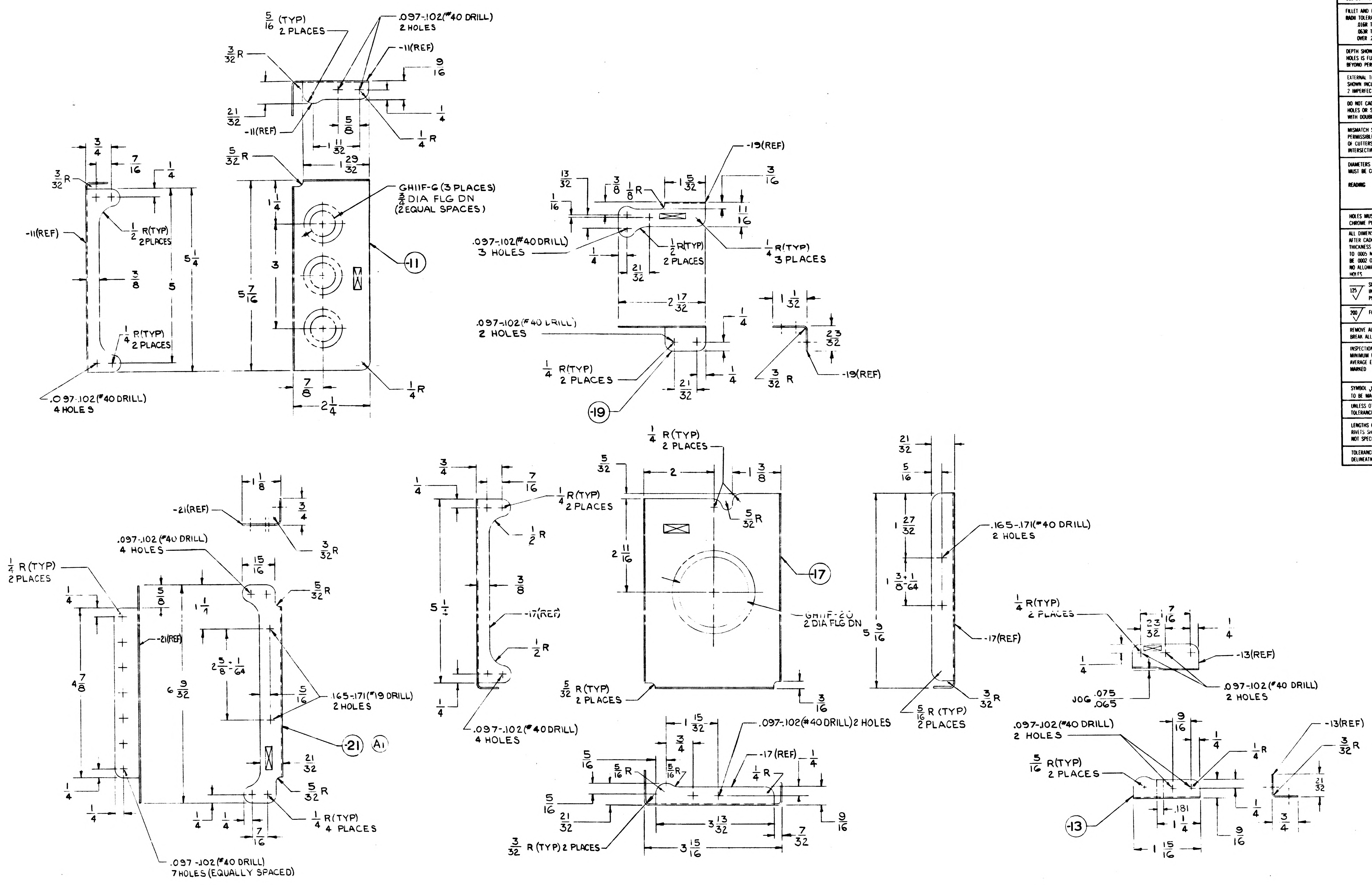
SIZE	CODE IDENT NO.		
B	26512	LDW280-10923	A

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01 NAS 9-1100



-11
-19
-21
A1
-17
-13
.097-.102 (#40 DRILL) 2 HOLES
.097-.102 (#40 DRILL) 3 HOLES
.097-.102 (#40 DRILL) 4 HOLES
.097-.102 (#40 DRILL) 7 HOLES (EQUALLY SPACED)
.097-.102 (#40 DRILL) 2 HOLES
.165-.171 (#19 DRILL) 2 HOLES
.165-.171 (#40 DRILL) 2 HOLES
GH11F-6 (3 PLACES) 3/4 DIA FLG DN (2 EQUAL SPACES)
GH11F-20 2 DIA FLG DN
-11(REF)
-19(REF)
-21(REF)
-17(REF)
-13(REF)
1/4 R(TYP) 2 PLACES
1/2 R(TYP) 2 PLACES
1/4 R(TYP) 3 PLACES
1/4 R(TYP) 4 PLACES
5/32 R (TYP) 2 PLACES
3/32 R (TYP) 2 PLACES
5/16 R (TYP) 2 PLACES
5/16 (TYP) 2 PLACES
JOG .075 .065

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

LM	SIZE E	CODE IDENT NO. 26512	LDW280-10923	A
MODEL OR END ITEM	SCALE FULL		SHEET 3	

LDW280-10923 A

LDW280-10924 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28333	LEM-2(32)	2
LM	LDW280-28333	LEM-1(31)	2
LM	LDW280-28333	LTA-8(18)	2
PART NO. LDW280-10924-15		GAEC SCH NO. 32	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28333	LM-2(32)	1EA
LM	LDW280-28333	LM-1(31)	1EA
LM	LDW280 28333	LTA-8(18)	1EA
PART NO. LDW-280-10924-11,-13,-17,&-19		GAEC SCH NO. 32	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A

LAST SECT LTR USED

LAST DASH NO. USED -19

GRUMMAN REL INFO A

PRIM NO. 215 FR(001) MP6A 1/16/7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.010 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	DiMARCO/CARROLL 4-7-66	RELIABILITY	
LAYOUT BY	DiMARCO/CARROLL 4-7-66		
CHECKED BY	CNB		
GR LEADER	W. TRANT 4-7-66		
VEH DES INT	W P BISCHOFF 4-7-66		
STRUCTURES	FEB 4-7-66	PROJ ENGR	J. ALBER/RNC 4-12-66
STRUCTURES	R HILDERMAN 4-7-66	REL GROUP	BOTTI 4-12-66
WEIGHTS	D. ROBESCH 4-11-66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT
ASCENT STAGE MID SECTION-Z27
BULKHEAD PIPING

SIZE B CODE IDENT NO. 26512 LDW280-10924 A
SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-10924 NO CHANGE 4-12-66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHG LAST REV NO CHG, C.CASTELLANO/JESAITIS 12-1966 SHEET 1.00 OF 4 WAS 1.00 OF 2, ADDED SHEET 1.10 & 3.00						
A	1							EO-A1	SUPERSEDED BY EO-A2	NOT REQ'D	NOT	REQ'D	CASTELLANO 10-13-66		
	2	1.00, 1.10 2.00, 300						EO-A2	SUPERSEDES EO-A1, ADDED -17 & -19	LTA-8, LM-1 LM-2	NOT	REQ'D			
	3							EO-A3	IN B/M (ON-11) MATL 2024-0, HT T42 WAS 2024-T3. IN M/B. LDW280-10924-15, 2 REQ'D/MODULE WAS 1 REQ'D. EG	LTA-8 LM-1 LM-2	✓				

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	RELIABILITY
A					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10924	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10924-19	E	ANGLE	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 X 3 X 3	NONE	88	
								-17		BRACKET	AL ALLOY SH	QQ-A250/4	2024-T3	.040X 4 X7	NONE	88	
								-15		BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.032X 4 X 6	NONE	88	
								-13		PLATE	AL ALLOY SH	QQ-A-250/4	2024-T3	.063X 3 X 5	NONE	88	
								LDW280-10924- 11	E	CLIP	AL ALLOY SH	QQ-A250/4	2024	.032 X 2 X 2	T42	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T42	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

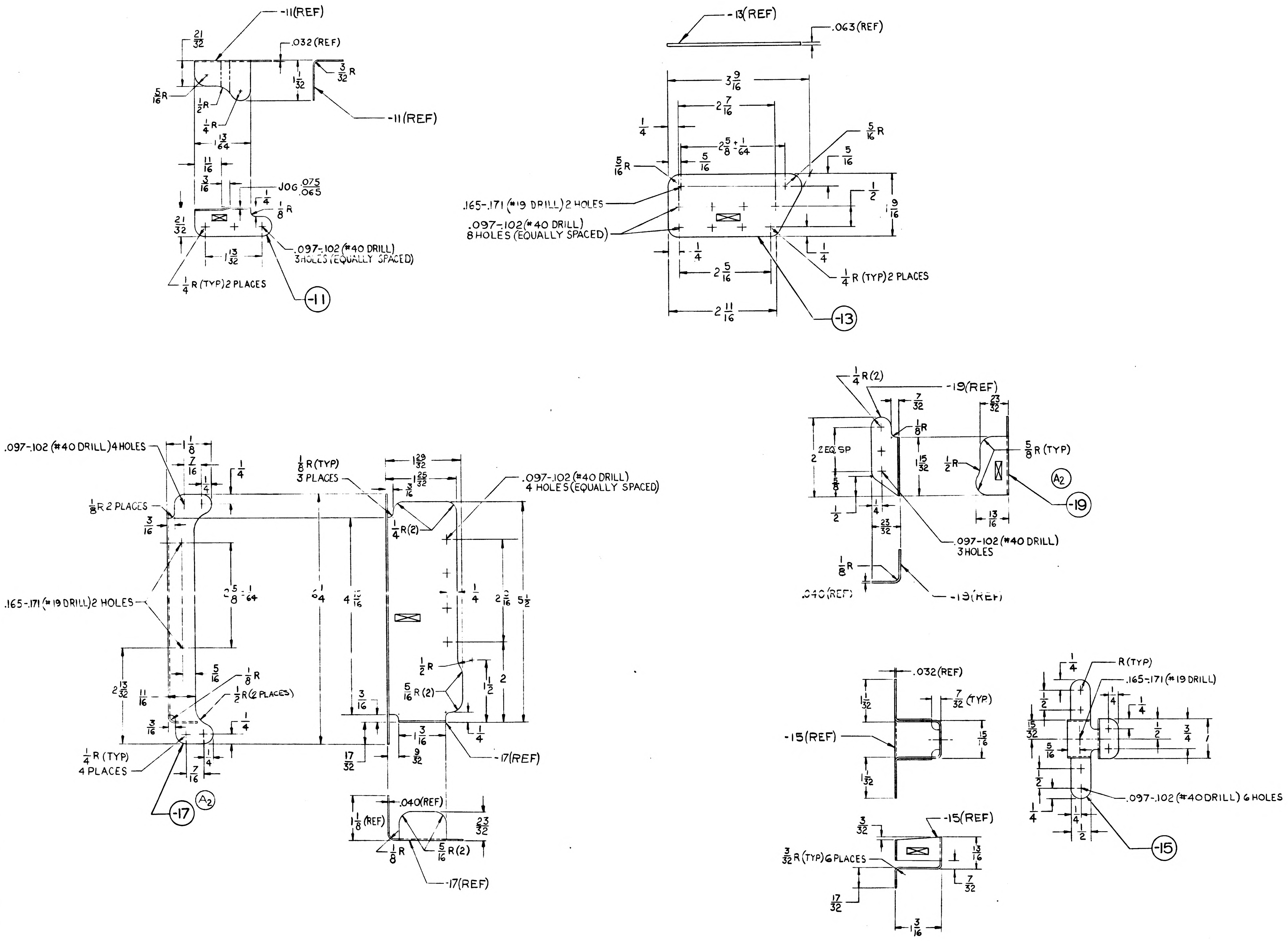
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10924	A
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



-11(REF)
.032(REF)
-11(REF)
JOG .075/.065
.097-.102 (#40 DRILL) 3 HOLES (EQUALLY SPACED)
1/4 R (TYP) 2 PLACES
-11
-13(REF)
.063(REF)
.165-.171 (#19 DRILL) 2 HOLES
.097-.102 (#40 DRILL) 8 HOLES (EQUALLY SPACED)
1/4 R (TYP) 2 PLACES
-13
.097-.102 (#40 DRILL) 4 HOLES
1/8 R 2 PLACES
.165-.171 (#19 DRILL) 2 HOLES
1/8 R (TYP) 3 PLACES
.097-.102 (#40 DRILL) 4 HOLES (EQUALLY SPACED)
1/2 R (2 PLACES)
1/4 R (TYP) 4 PLACES
-17
A2
-17(REF)
.040(REF)
-17(REF)
1/4 R(2)
-19(REF)
5/8 R (TYP)
A2
-19
2 EQ SP
.097-.102 (#40 DRILL) 3 HOLES
.040(REF)
-19(REF)
.032(REF)
7/32 (TYP)
-15(REF)
-15(REF)
3/32 R (TYP) 6 PLACES
R (TYP)
.165-.171 (#19 DRILL)
.097-.102 (#40 DRILL) 6 HOLES
-15

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

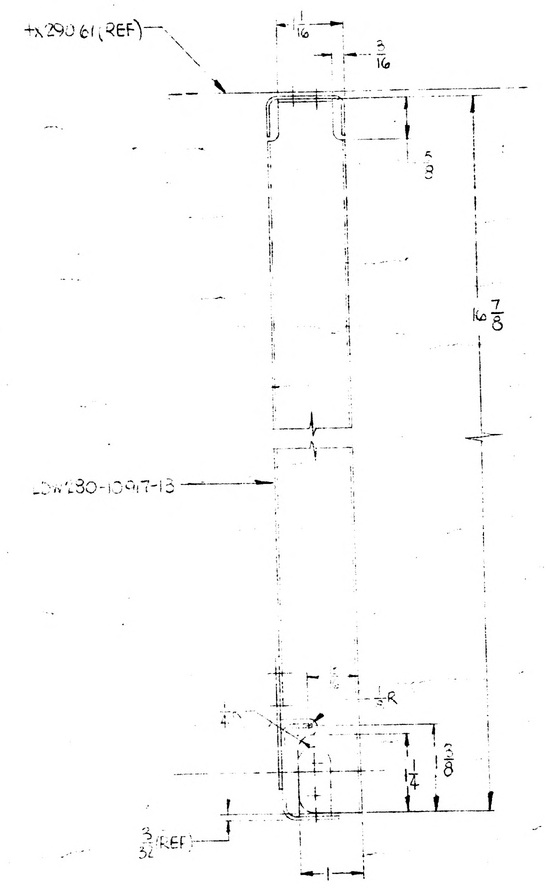
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	F	26512	LDW280-10924	A
	SCALE FULL			SHEET 3.0

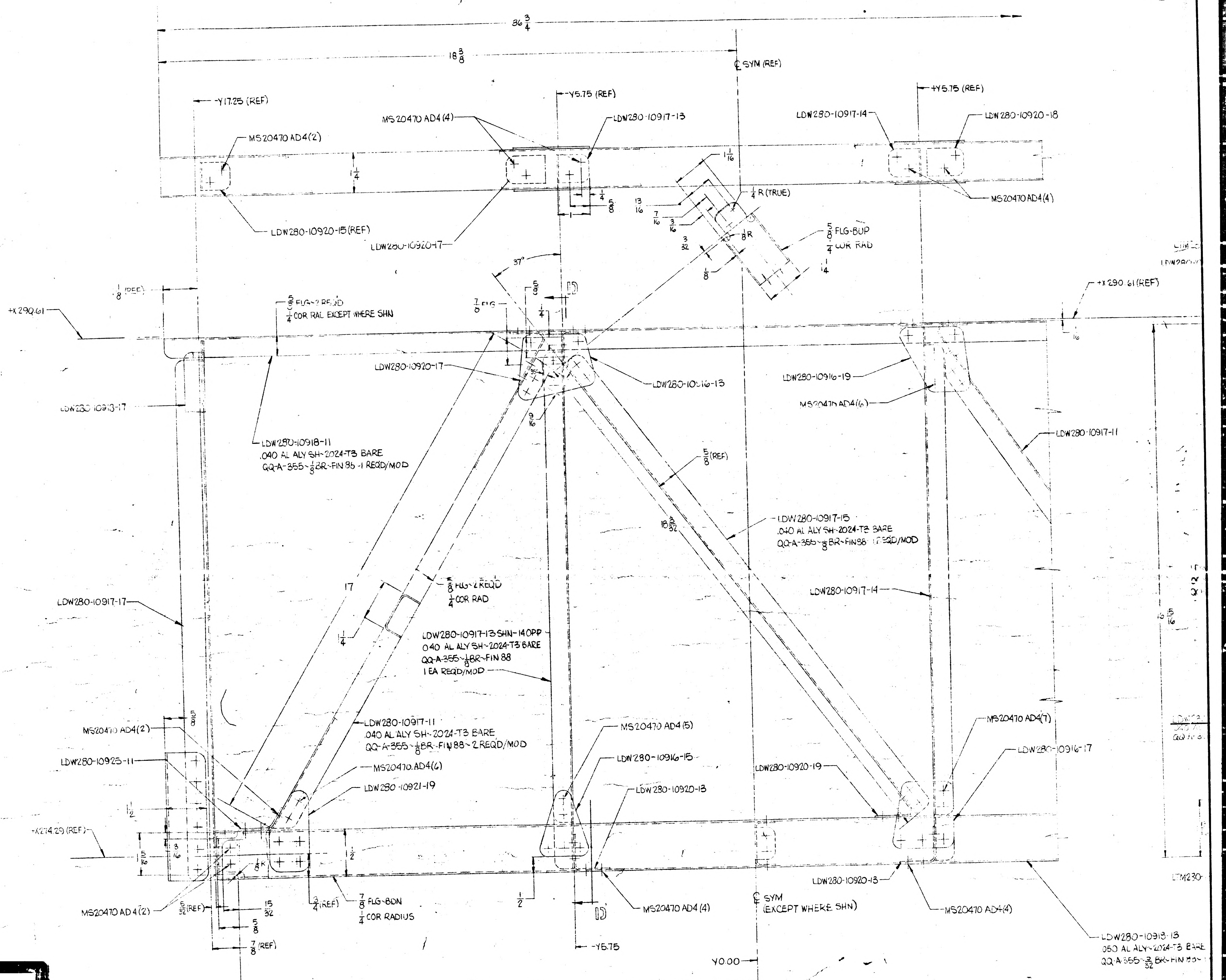
ENG 735 644

01 NAS 9-1100



+X290.61 (REF)
1/16
3/16
5/8
16 7/8
LDW280-10917-13
1/8 R
3/8
1/4
3/32 (REF)
1

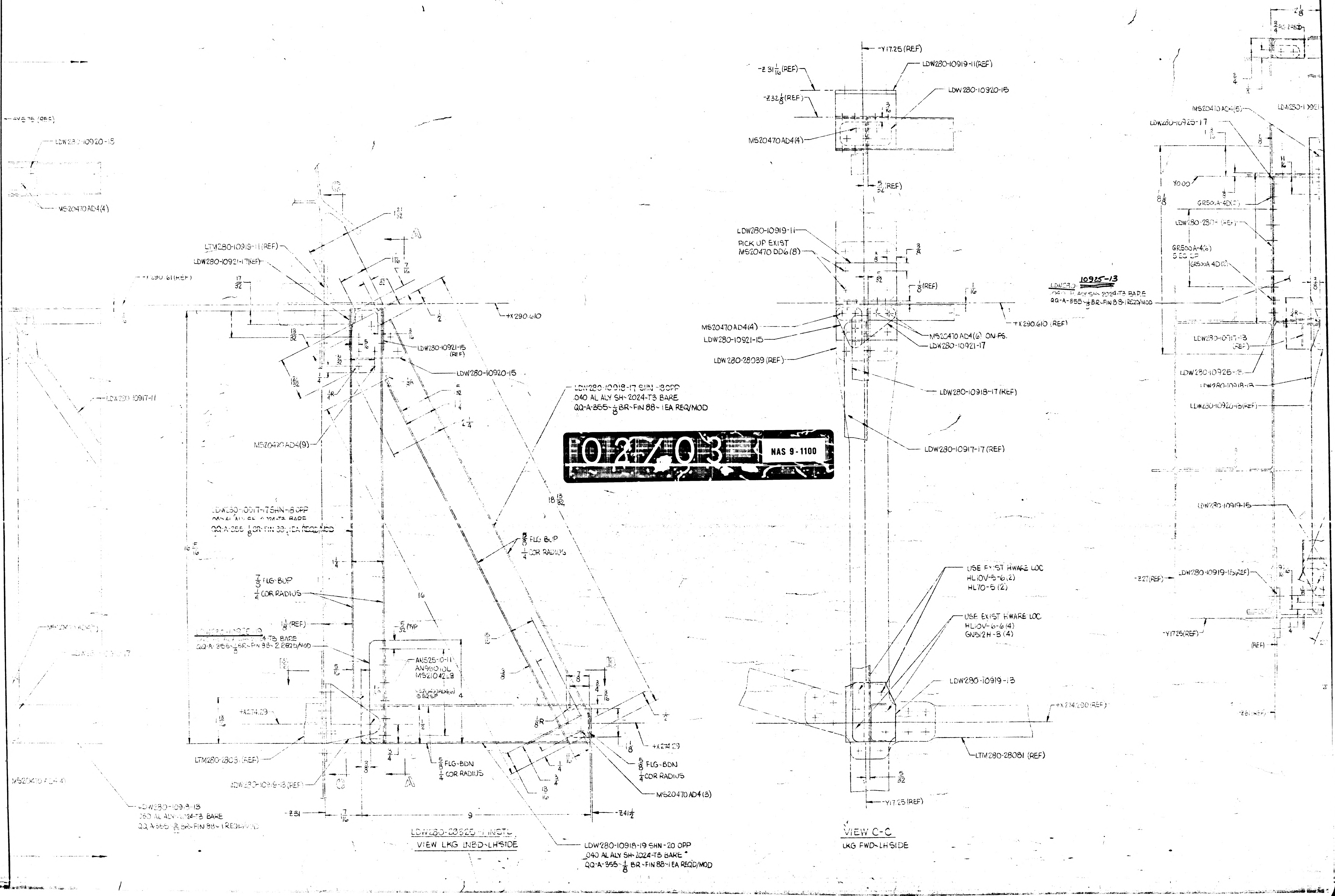
VIEW D-D

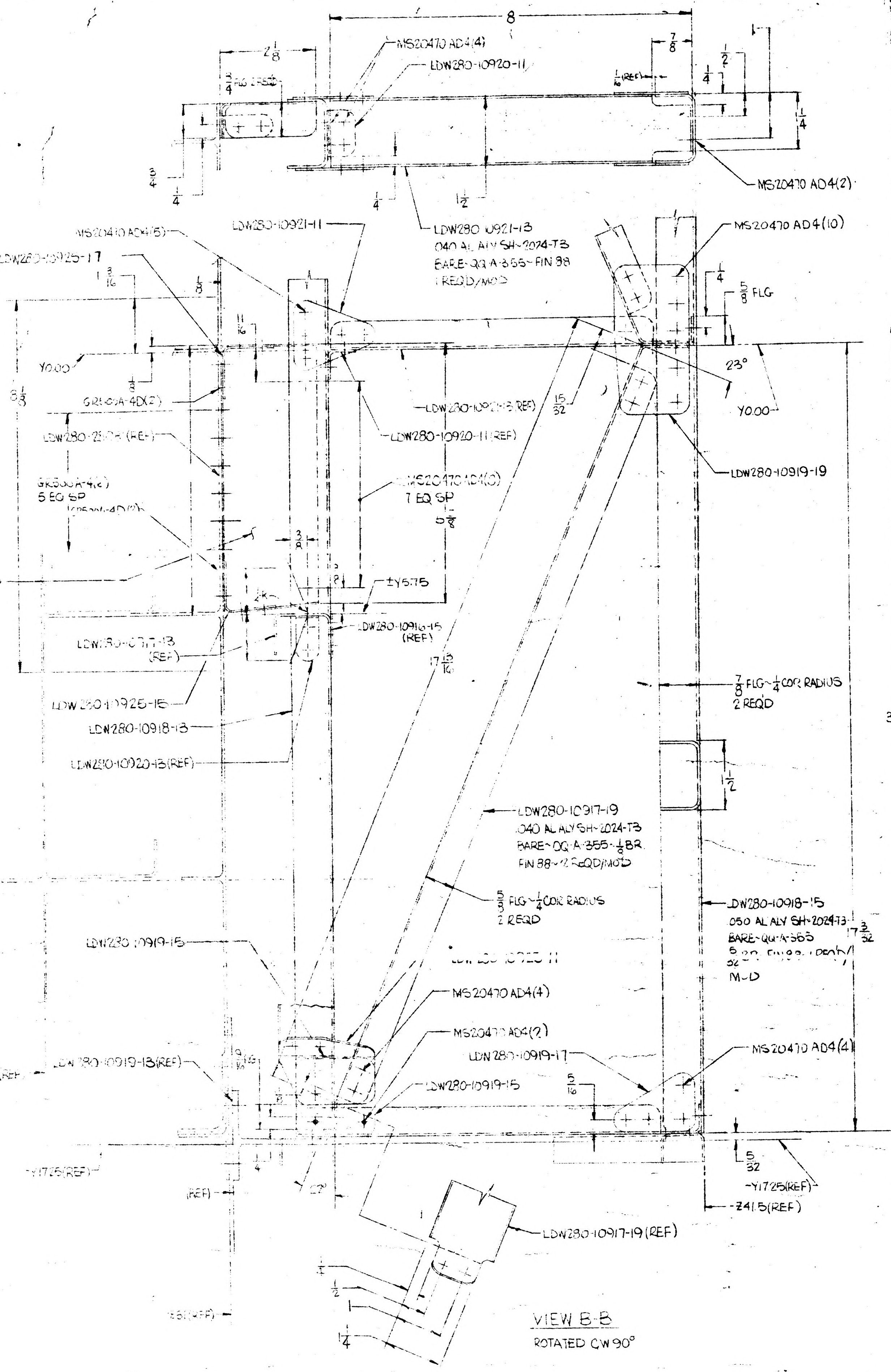


36 3/4
18 3/8
℄ SYM (REF)
-Y17.25 (REF)
-Y5.75 (REF)
+Y5.75 (REF)
MS20470 AD4(2)
MS20470 AD4(4)
LDW280-10917-13
LDW280-10917-14
LDW280-10920-18
MS20470 AD4(4)
1 1/4
1/4
5/8
LDW280-10920-15 (REF)
LDW280-10920-17
1 1/16
1/4 R (TRUE)
13/16
7/16
3/16
1/8 R
3/32
5/8 FLG-BUP
1/4 COR RAD
1 1/4
1/8
37°
1/8 (REF)
5/8 FLG-2 REQD
1/4 COR RAD EXCEPT WHERE SHN
7/8 FLG
5/8
1/4
D
+X290.61
+X290.61 (REF)
1/16
LDW280-10920-17
LDW280-10916-13
LDW280-10916-19
MS20470 AD4(6)
LDW280-10913-17
9/16
LDW280-10918-11
.040 AL ALY SH~2024-T3 BARE
QQ-A-355~1/8 BR~FIN 85-1 REQD/MOD
5/8 (REF)
LDW280-10917-11
18 3/32
LDW280-10917-15
.040 AL ALY SH~2024-T3 BARE
QQ-A-355~1/8 BR~FIN 88-1 REQD/MOD
17
5/8 FLG-2 REQD
1/4 COR RAD
LDW280-10917-14
16 5/16
LDW280-10917-17
1 1/4
LDW280-10917-13 SHN-1 OPP
.040 AL ALY SH~2024-T3 BARE
QQ-A-355~1/8 BR~FIN 88
1 EA REQD/MOD
LDW280-10917-11
.040 AL ALY SH~2024-T3 BARE
QQ-A-355~1/8 BR~FIN 88~2 REQD/MOD
MS20470 AD4(2)
5/8
LDW280-10925-11
MS20470 AD4(6)
LDW280-10921-19
MS20470 AD4(5)
LDW280-10916-15
LDW280-10920-13
LDW280-10920-19
MS20470 AD4(7)
LDW280-10916-17
1 1/2
+X274.29 (REF)
1 5/16
3/16
1/2
1/8
MS20470 AD4(2)
5/32 (REF)
15/32
5/8
7/8 (REF)
3/4 (REF)
7/8 FLG-BDN
1/4 COR RADIUS
1/2
D
-Y5.75
MS20470 AD4(4)
℄ SYM
(EXCEPT WHERE SHN)
LDW280-10920-13
MS20470 AD4(4)
LDW280-10918-13
.050 AL ALY~2024-T3 BARE
QQ-A-355~3/32 BR~FIN 85
Y0.00
16 3/8
37 3/4

01/03

NAS 9-1100


1021703
NAS 9-1100
LDW280-10920-15
MS20470AD4(4)
LDW280-10917-11
LTM280-10919-11(REF)
LDW280-10921-17(REF)
+X290.61(REF)
LDW280-10921-15 (REF)
LDW280-10920-15
MS20470AD4(9)
LDW280-10918-17 SHN-18 OPP .040 AL ALY SH-2024-T3 BARE QQ-A-355-1/8 BR-FIN 88-1 EA REQ/MOD
LDW280-10917-17 SHN-18 OPP .040 AL ALY SH-2024-T3 BARE QQ-A-355-1/8 BR-FIN 88-1 EA REQD/MOD
+X290.610
7/8 FLG-BUP 1/4 COR RADIUS
5/8 FLG-BUP 1/4 COR RADIUS
1/8 (REF)
5/32 TYP
QQ-A-355-1/8 BR-FIN 88-2 REQD/MOD
AN525-10-11
AN960-10L
MS21042L3
MS20470AD4(6) 5 EQ SP
+X274.29
LTM280-28031 (REF)
LDW280-10919-13 (REF)
LDW280-10919-13 .063 AL ALY SH-2024-T3 BARE QQ-A-355-1/8 BR-FIN 88-1 REQD/MOD
5/8 FLG-BDN 1/4 COR RADIUS
5/8 FLG-BDN 1/4 COR RADIUS
MS20470AD4(3)
+X274.29
-Z31
-Z41 1/2
9
LDW280-28325-1 INSTL
VIEW LKG INBD-LHSIDE
LDW280-10918-19 SHN-20 OPP .040 AL ALY SH-2024-T3 BARE QQ-A-355-1/8 BR-FIN 88-1 EA REQD/MOD
-Y17.25 (REF)
LDW280-10919-11(REF)
-Z31 1/16(REF)
-Z32 1/8(REF)
LDW280-10920-15
MS20470AD4(4)
5/32(REF)
LDW280-10919-11
PICK UP EXIST MS20470DD6(8)
1/8(REF)
MS20470AD4(4)
LDW280-10921-15
LDW280-28039 (REF)
MS20470AD4(6) ON FS.
LDW280-10921-17
+X290.610 (REF)
LDW280-10918-17 (REF)
LDW280-10917-17 (REF)
USE EXIST HWARE LOC HL10V-5-6(2) HL70-5(2)
USE EXIST HWARE LOC HL10V-6-6(4) GN512H-8(4)
LDW280-10919-13
+X274.290 (REF)
LTM280-28081 (REF)
5/32
-Y17.25 (REF)
VIEW C-C
LKG FWD-LH SIDE
MS20470AD4(5)
LDW280-10925-17
Y0.00
GR500A-4(XE)
LDW280-2501 (REF)
GR500A-4(6) 5 EQ SP
GR500A-4D(2)
LDW280-10925-13 .040 AL ALY SH-2024-T3 BARE QQ-A-355-1/8 BR-FIN 88-1 REQD/MOD
LDW280-10917-13 (REF)
LDW280-10925-15
LDW280-10918-13
LDW280-10920-15(REF)
LDW280-10919-15
-Z27(REF)
LDW280-10919-15(REF)
-Y17.25(REF)
(REF)


8
$2\frac{1}{8}$
MS20470 AD4(4)
LDW280-10920-11
$\frac{3}{4}$ FLG 2 REQD
$\frac{7}{8}$
$\frac{1}{16}$ (REF)
$\frac{1}{2}$
$\frac{1}{4}$
$\frac{3}{4}$
$\frac{1}{4}$
$1\frac{1}{2}$
MS20470 AD4(2)
LDW280-10921-13
.040 AL ALY SH~2024-T3
BARE~QQ-A-355~FIN 88
1 REQD/MOD
LDW280-10921-11
MS20470 AD4(5)
LDW280-10925-17
$1\frac{3}{16}$
$\frac{1}{8}$
$\frac{11}{16}$
MS20470 AD4(10)
$\frac{5}{8}$ FLG
23°
Y0.00
Y0.00
$8\frac{1}{8}$
GR500A-4D(2)
LDW280-10921-13 (REF)
$\frac{15}{32}$
LDW280-10920-11 (REF)
LDW280-10919-19
LDW280-28019 (REF)
GR500A-4(2)
5 EQ SP
GR500A-4D(2)
MS20470 AD4(8)
7 EQ SP
$5\frac{5}{8}$
$\frac{3}{8}$
±Y5.75
LDW280-10917-13 (REF)
LDW280-10916-15 (REF)
$17\frac{13}{16}$
LDW280-10925-15
LDN280-10918-13
LDW280-10920-13(REF)
$\frac{7}{8}$ FLG~$\frac{1}{4}$ COR RADIUS
2 REQD
$34\frac{3}{16}$
$1\frac{1}{2}$
LDW280-10917-19
.040 AL ALY SH~2024-T3
BARE~QQ-A-355-$\frac{1}{8}$BR
FIN 88~1 REQD/MOD
$\frac{5}{8}$ FLG~$\frac{1}{4}$ COR RADIUS
2 REQD
LDW280-10918-15
.050 AL ALY SH~2024-T3
BARE~QQ-A-355
FIN 88~1 REQD/MOD
$17\frac{3}{32}$
LDW280-10919-15
LDW280-10925-11
MS20470 AD4(4)
MS20470 AD4(2)
LDN280-10919-17
LDW280-10919-13(REF)
LDW280-10919-15
$\frac{5}{16}$
MS20470 AD4(4)
$\frac{5}{32}$
-Y17.25(REF)
-Y17.25(REF)
-Z41.5(REF)
(REF)
27°
LDW280-10917-19 (REF)
$\frac{1}{2}$
$1\frac{1}{4}$
Z61(REF)

VIEW B-B
ROTATED CW 90°

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	LSPM-9030	

RECORD DRAWINGS AND E.O.'S				
MODEL	RECORD DWG NO	E. O. NO.	MILITARY NO.	APL NO.

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

MANUFACTURING OPERATIONS

NOTES CHECKED V APPLY TO THIS DWG.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.

REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.

125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.

200 FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.

FILLET AND INSIDE CORNER RADII TOLERANCES
.016R TO .062R ± .010
.063R TO .250R ± .015
OVER .250R ± .030

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.

MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS

SYMBOL ƒ DENOTES SURFACE TO BE MACHINED

UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.

REVISIONS															
REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION					DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MILITARY NUMBER	DISPOSITION OF EXIST PARTS		ENGRG APPD	GOVT APP
			GRUMMAN INFO ONLY / DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER IBCC NO.				RE-WORK	SCRAP		

DWG SIZE 34 X

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X) = SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = SQ. FT.

PRINT TRIM LINE

NOTES —

1. ALL INFORMATION PERTAINING TO THE FOLLOWING DRAWINGS ARE FOR REFERENCE PURPOSES ONLY —

LDW280-28325
LDW280-10916
LDW280-10917
LDW280-10918
LDW280-10919
LDW280-10920
~~LDW280-10921~~

THE NEXT ASSY, NO REQD/MODULE & EFFECTIVITY FOR THE ABOVE DRAWINGS ARE AS FOLLOWS —

LDW280-28325-1, N.A~LDW280-28019, EFFECTIVITY~LTA-8(18), LEM-1(31), LEM-2(32), NO REQD/MODULE~1
LDW280-10916 -13, -15, -17 & -19, N.A.~LDW280-28**325**. EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32), NO REQD/MODULE~SEE F/D.
LDW280-10917-11, -13, -14, -15, -17, -18 & -19, N.A.~LDW280-28**325**, EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32), NO REQD/MODULE~SEE F/D.
LDW280-10918-11, -13, -15, -17, -18, -19 & -20; N.A.~LDN280-28**325**. EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32); NO REQD/MODULE~SEE F/D.
LDW280-10919-11, -13, -14, -15, -17 & -19, N.A.~LDW280-28**325**. EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32), NO REQD/MODULE~SEE F/D
LDW280-10920-11, -13, -15, -16, -16, -18 & 19, N.A.~LDW280-28**325** EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32), NO REQD/MODULE~SEE F/D.
LDW280-10921-11, -13, -15, -17 & -19, N.A.~LDW 280-28**325** EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32), NO REQD/MODULE~SEE F/D
LDW280-10925-11, -12, -13, -15, -17 & -19 N.A.~LDW280-28**325**, EFFECTIVITY~LTA-8(18), LEM-1(31) & LEM-2(32) NO REQD/MODULE~SEE F/D

03/03
NAS 9-1100

I & T EXEMPT

QTY REQD PER ASSY			PART OR IDENTIFYING NO.	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE

MODEL	NEXT ASSY			REQD PER APL
LEM	NOTED	LTA-8(18), LEM-1(31)-2(32		NOTED
		MODULE [redacted]	[redacted]	
PART NUMBER			GRUMMAN SCH INFO 325	

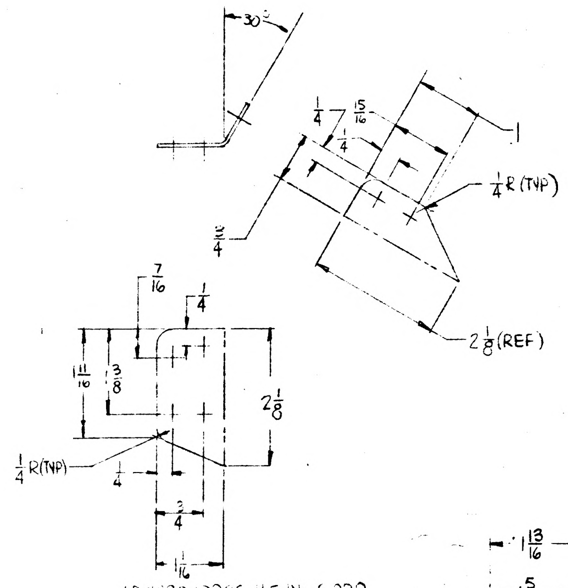
TO BE REDRAWN ON PRODUCTION FORMAT

3

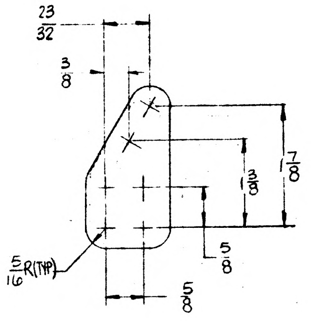
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ± $\frac{1}{32}$ ±.010 ±0 30'	DRAWN BY	BERLINQUETTE 4-3-66	GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., N. Y.
	LAYOUT BY		
	~~CHECKED BY~~	VDI	ANGLE ~ASCENT STAGE MID-SECT ~ -227 ELECTRICAL
	GR LEADER	W.Trout 4/6/66	
ORIG DWG AUTH	~~STRUCTURE~~		
DETAIL SPEC REQUIREMENT	STRUCTURE		CONTRACT NO.
CLASS II ENGRG CHANGE	WEIGHTS	4-6-46	CODE IDENT NO. 26512 · SIZE J · LDW280-10925
CLASS I ENGRG CHANGE	PROJ ENGR	4-6-66	
GRUMMAN REL&INFO	~~GOVT~~ APPD	Botti 4-6-66	SCALE FULL · SHEET 1 OF 2
PEI 2/5 · LE(001) MP12 · RS 4.6			

LINE ITEM #1 DOCUMENTATION TYPE II

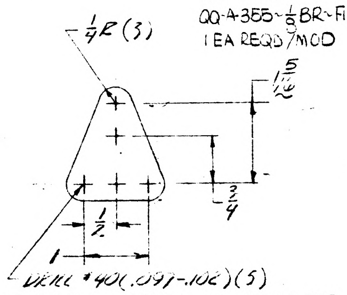
LDW280-10925


30°
1/4
15/16
1/4
1/4 R (TYP)
3/4
2 1/8 (REF)
7/16
1/4
1 11/16
3/8
2 1/8
1/4 R (TYP)
1/4
3/4
1 1/16

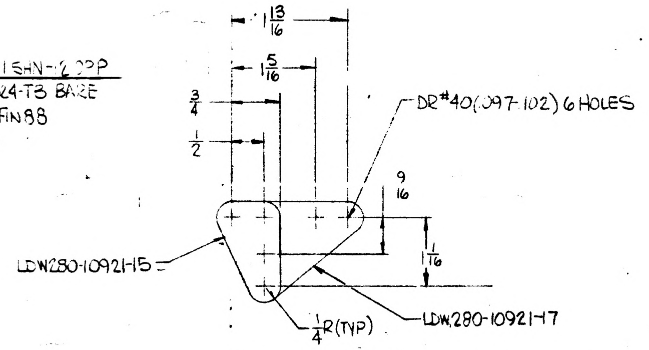
LDW280-10926-11 SHN-12 OPP
.040 AL ALY SH~2024-T3 BARE
QQ-A-355~1/8 BR~FIN 88
1 EA REQD/MOD


23/32
3/8
1 7/8
1 3/8
5/8
5/16 R (TYP)
5/8

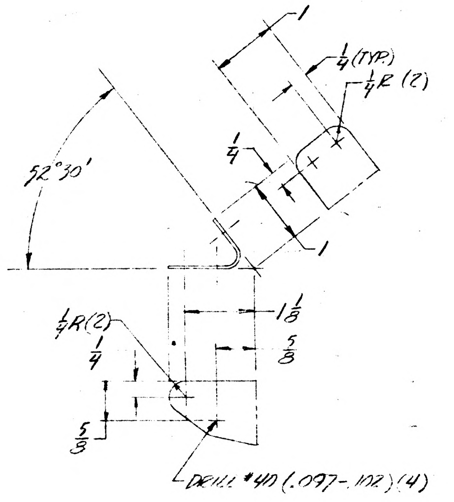
LDW280-10921-19
.040 AL ALY SH~2024-T3 BARE
QQ-A-355~FIN 88~2 REQD/MOD


1/4 R (3)
1 5/16
3/4
1/2
1
DRILL #40 (.097-.102) (5)

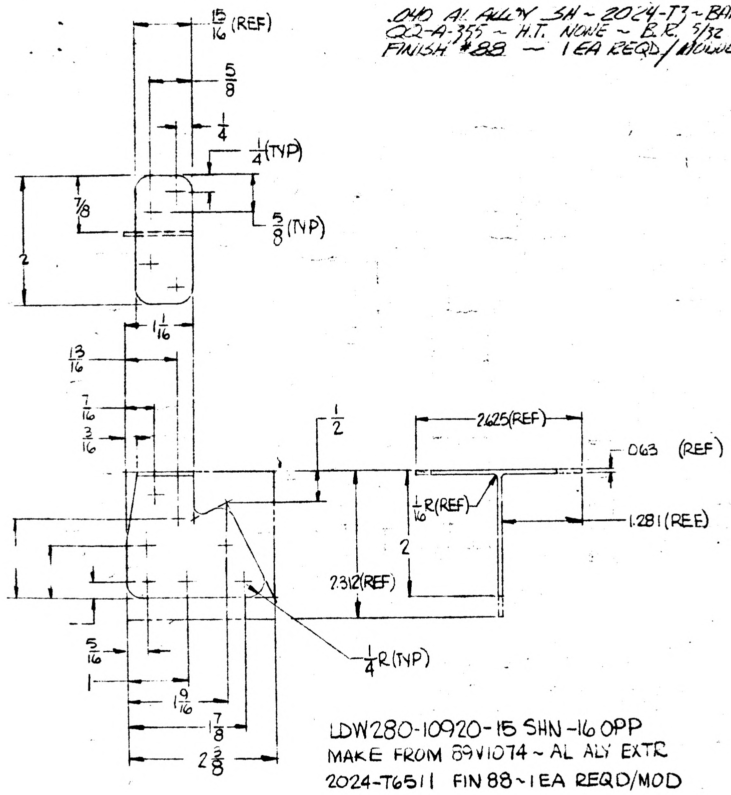
LDW280-10921-11 GUSSET
.040 AL ALLOY SH ~ 2024-T3 ~ BARE
QQ-A-355 ~ H.T. NONE ~ FINISH #88
2 REQD / MODULE


1 13/16
1 5/16
3/4
1/2
DR #40 (.097-.102) 6 HOLES
9/16
1 1/16
LDW280-10921-15
1/4 R (TYP)
LDW280-10921-17

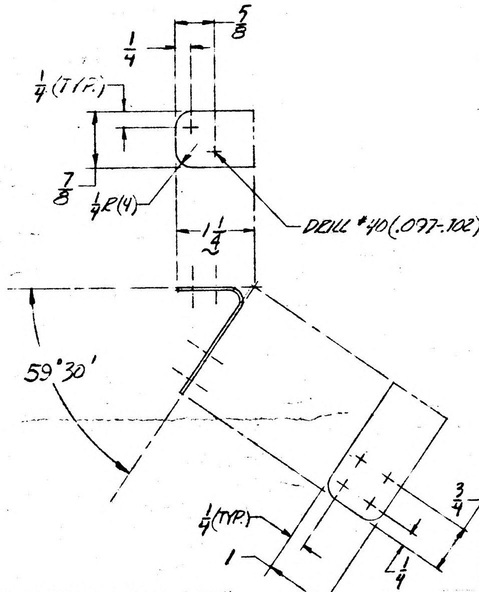
LDW280-10921-15 & -17
.040 AL ALY SH~2024-T3 BARE
QQ-A-355~FIN 88~2 EA REQD/MOD


1
1/4 (TYP)
1/4 R (2)
1/4
52°30'
1
1/4 R (2)
1/4
1 1/8
5/8
5/8
DRILL #40 (.097-.102) (4)

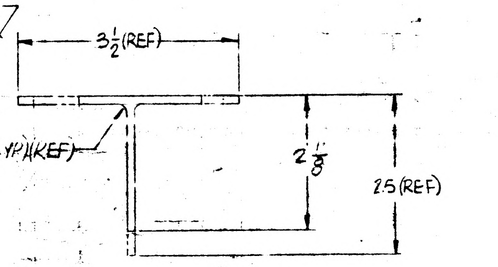
LDW280-10920-19 CLIP
.040 AL ALLOY SH ~ 2024-T3 BARE
QQ-A-355 ~ H.T. NONE ~ B.R. 5/32
FINISH #88 ~ 1 REQD / MODULE

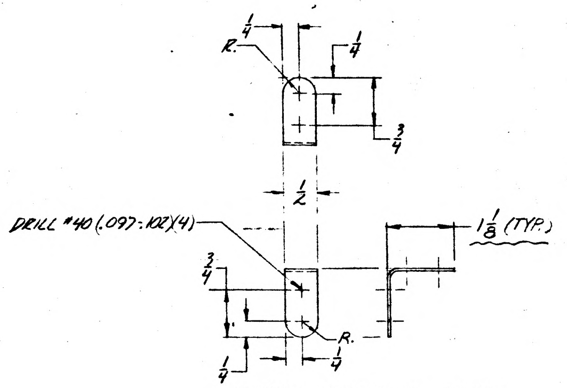

15/16 (REF)
5/8
1/4
1/4 (TYP)
7/8
5/8 (TYP)
2
1 1/16
13/16
7/16
3/16
1/2
2.625 (REF)
.063 (REF)
1/16 R (REF)
.1281 (REF)
2.312 (REF)
1/4 R (TYP)
5/16
1
1 9/16
1 7/8
2 3/8

LDW280-10920-15 SHN-16 OPP
MAKE FROM 89V1074 ~ AL ALY EXTR
2024-T6511 FIN 88 ~ 1 EA REQD/MOD

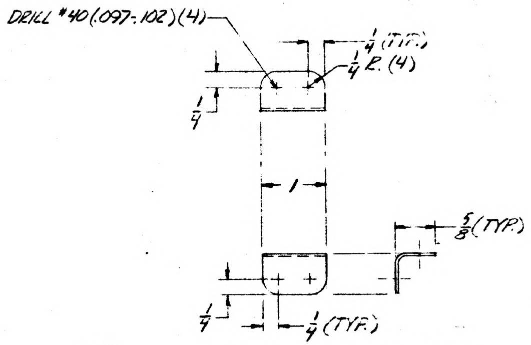

5/8
1/4
1/4 (TYP.)
7/8
1/4 R (4)
1 1/4
DRILL #40 (.097-.102) (6)
59°30'
3/4
1/4 (TYP.)
1
1/4

LDW280-10920-17 CLIP (SHN)
-18 CLIP (OPP)
.040 AL ALLOY SH ~ 2024-T3 ~ BARE
QQ-A-355 ~ H.T. NONE ~ B.R. 5/32
FINISH #88 ~ 1 EA REQD / MODULE

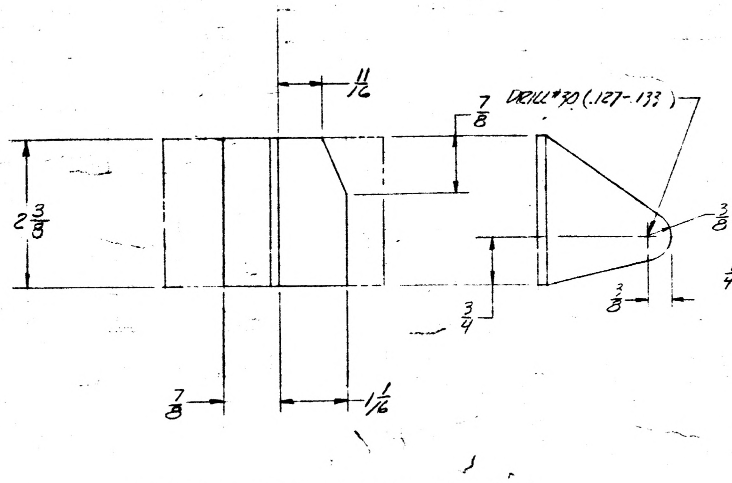

3 1/2 (REF)
.125 R (TYP) (REF)
2 1/8
2.5 (REF)


1/4
R.
1/4
3/4
1/2
DRILL #40 (.097-.102) (4)
1 1/8 (TYP.)
3/4
R.
1/4
1/4

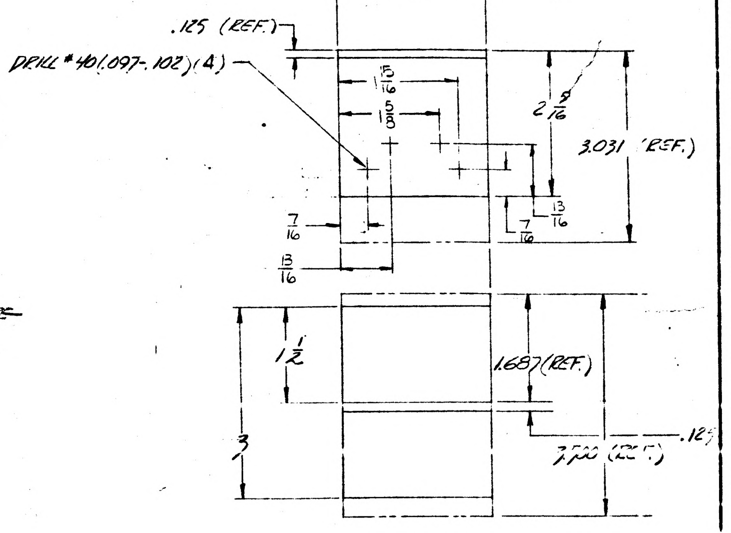
LDW280-10920-13 CLIP
.040 AL ALLOY SH ~ 2024-T3 ~ BARE
QQ-A-355 ~ H.T. NONE ~ B.R. 1/8
FINISH #88 ~ 2 REQD / MODULE


DRILL #40 (.097-.102) (4)
1/4 (TYP.)
1/4 R. (4)
1/4
1
5/8 (TYP.)
1/4
1/4 (TYP.)

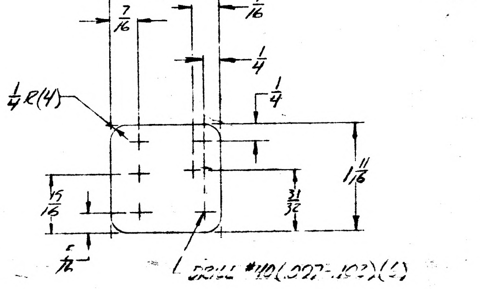
LDW280-10920-11 CLIP
.040 AL ALLOY SH ~ 2024-T3 ~ BARE
QQ-A-355 ~ H.T. NONE ~ B.R. 1/8
FINISH #88 ~ 1 REQD / MODULE


11/16
7/8
DRILL #30 (.127-.133)
2 3/8
3/8 R.
3/4
3/8
7/8
1 1/16

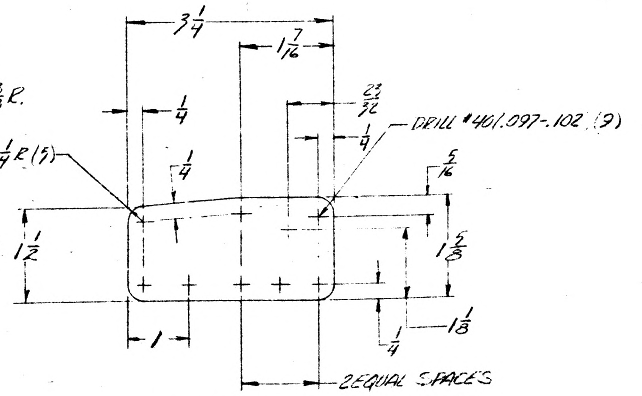
LDW280-10919-13 SHN-14 OPP
MAKE FROM 89V1134
AL ALLOY EXTR. ~ 7075-T6511
FINISH #88 ~ 1 EA REQD / MODULE


2 3/8
.125 (REF.)
DRILL #40 (.097-.102) (4)
13/16
5/8
2 9/16
3.031 (REF.)
7/16
13/16
7/16
13/16
1 1/2
1.687 (REF.)
3
.125
7.500 (REF.)

LDW280-10919-11 TEE
MAKE FROM DIE #65332
AL ALLOY EXTR. 7075-T6511
FINISH #88 ~ 2 REQD / MODULE


1 3/4
7/16
7/16
1/4
1/4 R (4)
1/4
15/16
31/32
1 11/16
5/32
DRILL #40 (.097-.102) (4)

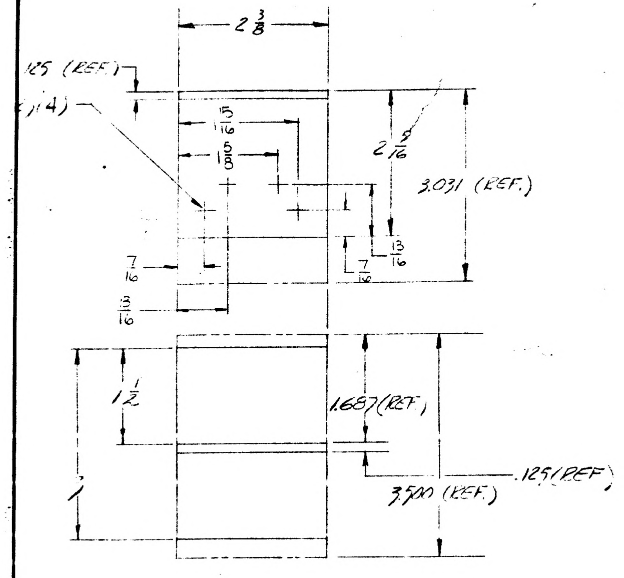
LDW280-10919-15 GUSSET
.040 AL ALLOY SH ~ 2024-T3 ~ BARE
QQ-A-355 ~ H.T. NONE ~ FINISH #88
2 REQD / MODULE


3 1/4
1 7/16
23/32
DRILL #40 (.097-.102) (9)
1/4
1/4
1/4 R (5)
5/16
1 1/2
1 5/8
1
1/4
1 1/8
2 EQUAL SPACES

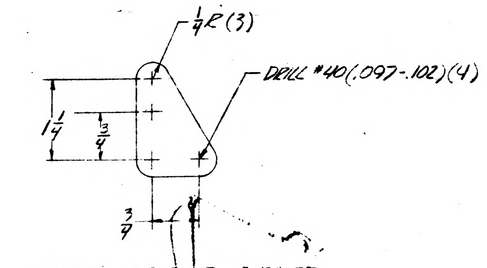
LDW280-10919-19 GUSSET
.040 AL ALLOY SH ~ 2024-T3 ~ BARE
QQ-A-355 ~ H.T. NONE ~ FINISH #88
2 REQD / MODULE

01/03 NAS 9-1100

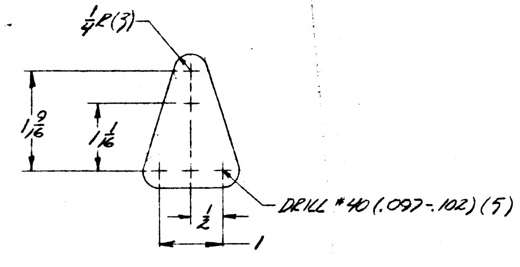
REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY / DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER 'BCC NO.


2 3/8
.125 (REF)
(4)
2 5/16
3.031 (REF.)
13/16
7/16
1 1/2
1.687 (REF)
.125 (REF)
3.500 (REF.)
1

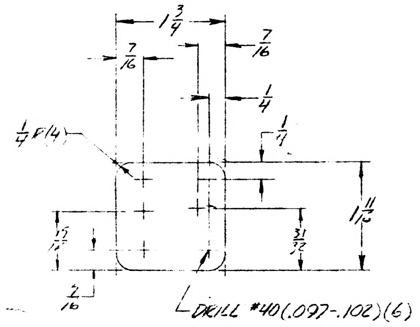
LDW280-10919-11 TEE
MAKE FROM DIE #65332
AL ALLOY EXTR. 7075-T6511
FINISH #88 ~ 2 REQD/MODULE


1/4 R (3)
DRILL #40 (.097-.102) (4)
1 1/4
3/4
3/4

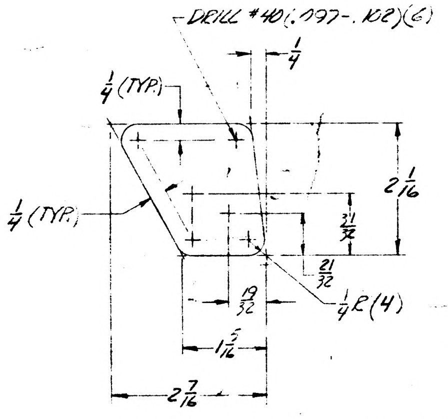
LDW280-10917-17 GUSSET
.040 AL ALLOY SH ~ 2024-T3
BARE ~ QQ-A-355 ~ H.T. NONE
FINISH #88 ~ 4 REQD/MODULE


1/4 R (3)
1 9/16
1 1/16
DRILL #40 (.097-.102) (5)
1/2
1

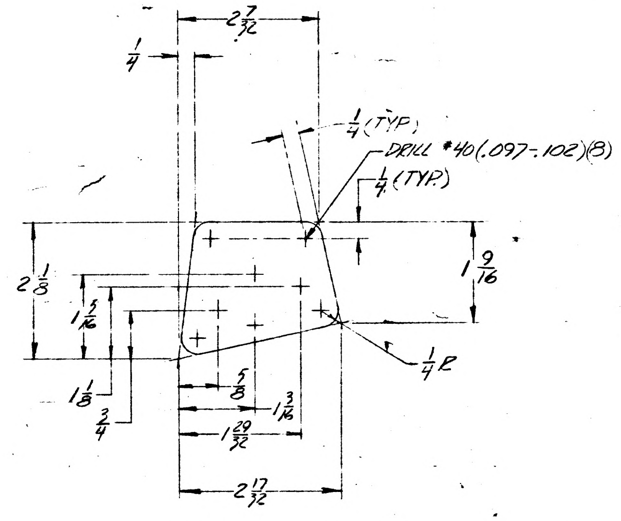
LDW280-10916-15 GUSSET
.040 AL ALLOY SH ~ 2024-T3 ~ BARE
QQ-A-355 ~ H.T. NONE ~ FINISH #88
1 REQD/MODULE


1 3/4
7/16
7/16
1/4
1/4
1/4 R (4)
1 11/16
31/32
15/16
2/16
DRILL #40 (.097-.102) (6)

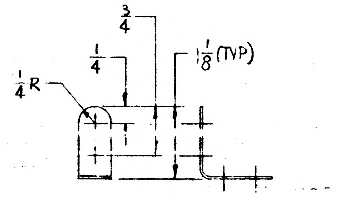
LDW280-10919-15 GUSSET
.040 AL ALLOY SH ~ 2024-T3 ~ BARE
QQ-A-355 ~ H.T. NONE ~ FINISH #88
4 REQD/MODULE


DRILL #40 (.097-.102) (6)
1/4
1/4 (TYP)
1/4 (TYP)
2 1/16
31/32
21/32
19/32
1/4 R (4)
1 5/16
2 7/16

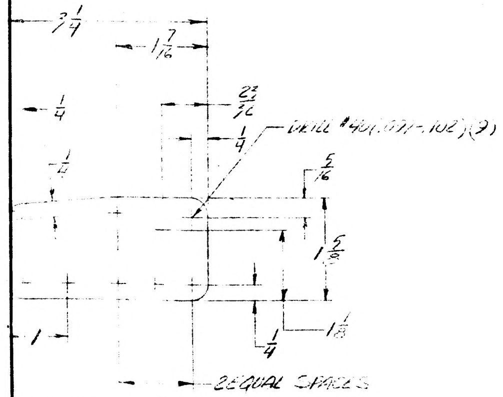
LDW280-10916-19 GUSSET
.040 AL ALLOY SH ~ 2024-T3 ~ BARE
QQ-A-355 ~ H.T. NONE ~ FINISH #88
2 REQD/MODULE


2 7/32
1/4
1/4 (TYP)
DRILL #40 (.097-.102) (8)
1/4 (TYP)
2 1/8
1 9/16
1 1/16
1 1/8
3/4
5/8
1 3/16
1 29/32
2 17/32
1/4 R

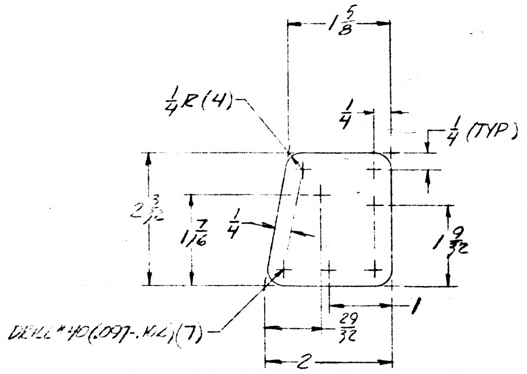
LDW280-10916-13 GUSSET
.040 AL ALLOY SH ~ 2024-T3 ~ BARE
QQ-A-355 ~ H.T. NONE ~ FINISH #88
2 REQD/MODULE


3/4
1/4
1 1/8 (TYP)
1/4 R

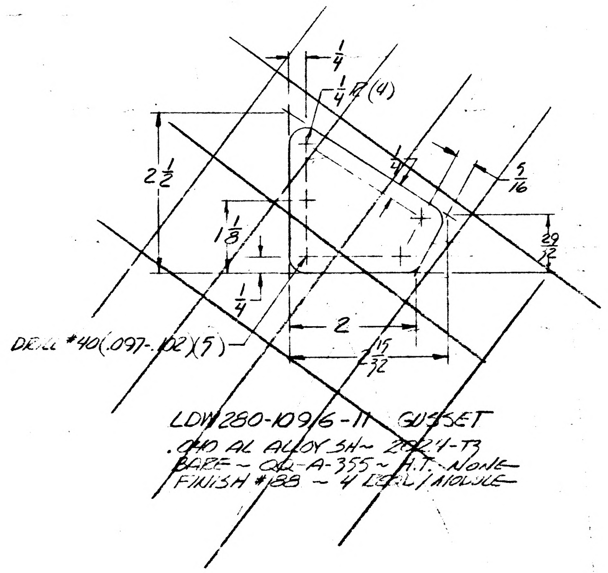
LDW280-10925-17
.032 AL ALY SH ~ 2024-T3 BARE
QQ-A-355 ~ FIN 88 ~ 1/8 BR ~ 1 REQD/MOD


3 1/4
1 7/16
1/4
23/32
DRILL #40 (.097-.102) (9)
5/16
1 5/8
1
1/4
1 1/8
2 EQUAL SPACES

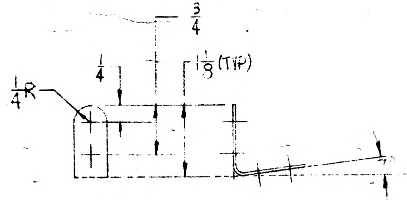
LDW280-10919-19 GUSSET
.040 AL ALLOY SH ~ 2024-T3 ~ BARE
QQ-A-355 ~ H.T. NONE ~ FINISH #88
2 REQD/MODULE


1 5/8
1/4 R (4)
1/4
1/4 (TYP)
2 3/8
1 7/16
1/4
1 9/32
DRILL #40 (.097-.102) (7)
29/32
1
2

LDW280-10916-17 GUSSET
.040 AL ALLOY SH ~ 2024-T3 ~ BARE
QQ-A-355 ~ H.T. NONE ~ FINISH #88
1 REQD/MODULE


1/4
1/4 R (4)
1/4
5/16
2 1/2
1 1/8
29/32
1/4
DRILL #40 (.097-.102) (5)
2
2 15/32

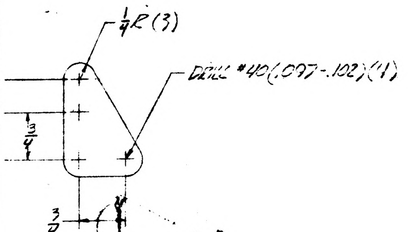
LDW280-10916-11 GUSSET
.040 AL ALLOY SH ~ 2024-T3
BARE ~ QQ-A-355 ~ H.T. NONE
FINISH #88 ~ 4 REQD/MODULE


3/4
1/4
1 1/8 (TYP)
1/4 R

LDW280-10925-15
.032 AL ALY SH ~ 2024-T3 BARE
QQ-A-355 ~ FIN 88 ~ 1/8 BR ~ 1 REQD/MOD

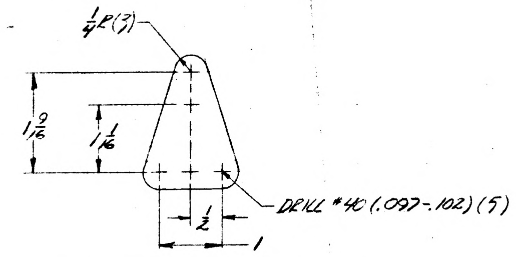
02/03 NAS 9-1100

REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY / DCAF OR ECP	CLASS II	CLASS I	ENGRG ORDER ISCC NO.	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MILITARY NUMBER	DISPOSITION OF EXIST PARTS: RE-WORK	SCRAP	ENGRG APPD	GOVT APPD



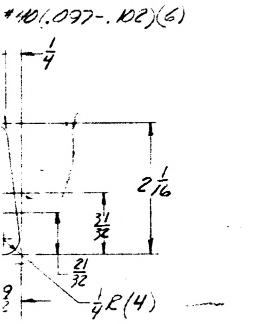
1/4R(3)
DRILL #40(.097-.102)(4)
3/4
3/4

...80-10917-17 GUSSET
...AL ALLOY SH ~ 2024-T3
...QQ-A-355 ~ H.T. NONE
...#88 ~ 4 REQ'L/MODULE



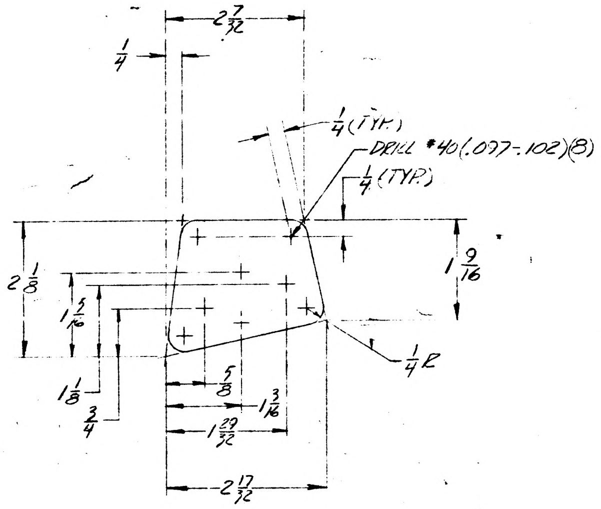
1/4R(3)
1 9/16
1 1/16
DRILL #40(.097-.102)(5)
1/2
1

LDW280-10916-15 GUSSET
.040 AL ALLOY SH ~ 2024-T3 ~ BARE
QQ-A-355 ~ H.T. NONE ~ FINISH #88
1 REQ'L/MODULE



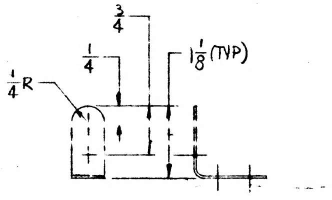
#40(.097-.102)(6)
1/4
2 1/16
31/32
21/32
9
1/4R(4)

...916-19 GUSSET
...SH ~ 2024-T3 ~ BARE
...H.T. NONE ~ FINISH #88
...ULE



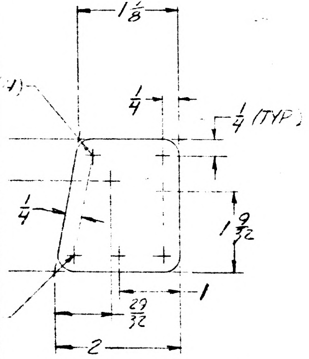
2 7/32
1/4
1/4(TYP)
DRILL #40(.097-.102)(8)
1/4(TYP)
2 1/8
1 9/16
1 1/16
1 1/8
3/4
5/8
1 3/16
1 29/32
1/4R
2 17/32

LDW280-10916-13 GUSSET
.040 AL ALLOY SH ~ 2024-T3 ~ BARE
QQ-A-355 ~ H.T. NONE ~ FINISH #88
2 REQ'D/MODULE



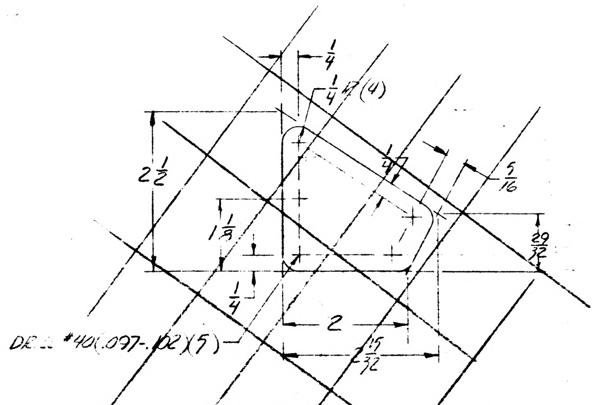
3/4
1/4
1 1/8(TYP)
1/4R

LDW280-10925-17
.032 AL ALY SH ~ 2024-T3 BARE
QQ-A-355 ~ FIN 88 ~ 1/8BR ~ 1 REQ'D/MOD



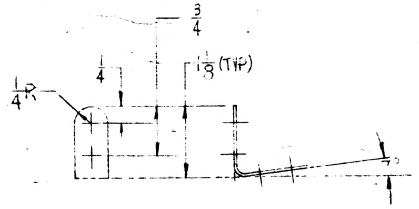
1 5/8
1/4
1/4(TYP)
1/4
1 9/32
29/32
1
2

-10916-17 GUSSET
...LOY SH ~ 2024-T3 ~ BARE
... H.T. NONE ~ FINISH #88
...MODULE



1/4
1/4R(4)
2 1/2
5/16
1 1/8
29/32
1/4
2
15/32
DRILL #40(.097-.102)(5)

LDW280-10916-11 GUSSET
.040 AL ALLOY SH ~ 2024-T3
BARE ~ QQ-A-355 ~ H.T. NONE
FINISH #88 ~ 4 REQ'L/MODULE



3/4
1/4
1 1/8(TYP)
1/4R

LDW280-10925-15
.032 AL ALY SH ~ 2024-T3 BARE
QQ-A-355 ~ FIN 88 ~ 1/8BR ~ 1 REQ'D/MOD

DWG. SIZE 34 X
PRINTING INFO ONLY
FULL SIZE SHEET AREA (34 X)
1/2 SIZE SHEET AREA 1/4 OF FULL
PRINT TRIM LINE

LDW280-10925

LDW280-10925

03703

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N.Y.

MODEL	CODE IDENT NO.	SIZE	
LEM	26512	J	LDW280-10925
	SCALE FULL		SHEET 2

ENG 32.1 REV 3-65

*

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

~~DWG~~ E NO. LEO 280

EO NO. 288

CONTROL INFO NO. LDW280A0749

ADD TM-2A|R EFFECTIVITY TO THE FOLLOWING DWGS.

DWG NO.	DASH NO *	NO. REQ'D	N/A	TITLE	CHANGE NO.
✓ LDW280-10916	-13, -19	2 EA	LDW280-28325	GUSSET-ASCENT STAGE-MID SEC -Z27 ELECTRICAL	A1
✓ -10916	-15, -17	1 EA		" " " " " "	
✓ -10917	-11, -19	2 EA		CHANNEL-ASCENT STAGE-MID SEC- -Z27 ELECTRICAL	A3
-10917	-13, -14, -15, -17, -18	1 EA			
✓ -10918	-11, -13, -17, -18	1 EA			A5
-10918	-19, -20, -15	1 EA		CHANNEL-ASCENT STAGE-MID SEC- -Z27 ELECTRICAL	
✓ -10919	-15, -17	4 EA		GUSSET-ASCENT STAGE-MID SEC- -Z27 ELECTRICAL	A1
-10919	-19	2		" " " " " " "	
✓ -10920	-11, -15, -16	1 EA		CLIP-ASCENT STAGE-MID SEC- -Z27 ELECTRICAL	A1
-10920	-17, -18, -19	1 EA		" " " " " " "	
-10920	-13	2		" " " " " " "	
✓ -10921	-11, -15, -17, -19	2 EA		GUSSET-ASCENT STAGE-MID SEC- -Z27 ELECTRICAL	A1
-10921	-13	1		" " " " " " "	
✓ -10925	-11, -12, -13, -15, -17	1 EA		ANGLE-ASCENT STAGE-MID SEC- -Z27 ELECTRICAL	A2
LDW 280-10925	-19	2	LDW280-28325	" " " " " " "	

3

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐

REASON FOR EO: ADDITIONAL REQUIREMENTS PROVIDED FOR TM-2A|R

DESCRIPTION OF EO: FOR * ADDED TM-2A|R REQUIREMENTS.

GAEC C EO RELEASE: LE 10-5

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		TM-2A|R (60)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK NOT SCRAP REQ'D

APPROVED BY: VDI
DATE: 7/26/66

SUPPORT

RELIAB. GROUP

GROUP LEADER: —

STRESS GROUP: 9-26-66

LIAISON ENGRG

PROJ ENGRG: RMC 10-5-66

10/3/66

PRIORITY: C

DRAWING TITLE: NOTED

~~DRAWING~~ EO NO.: LEO 280-

EO NO.: 288

ISSUED BY: J J FISCH

SECTION: VDI

GROUP NO.: 335 PL 35

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28247	QUAL(72)	1
LEM	LDW280-28247	LEM-3(33)	1
LEM	LDW280-28247	LEM-2(32)	1
LEM	LDW280-28247	LEM-1(31)	1
LEM	LDW280-28247	LTA-8 (18)	1

PART NO. LDW280-10926-11
GAEC SCH NO. 31-3

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED
LAST DASH NO. USED -11

GRUMMAN REL^c INFO
PRIM NO. 215
LE(001) MP12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE
RS

CONTRACT NO. NAS9-1100
LINE ITEM I
DOCUMENTATION TYPE II

DRAWN BY R.NISBET 3-2-66
LAYOUT BY J.J.OGOLIK 1-20-66
CHECKED BY CJR 3-7-66
GP LEADER J. Pusateri 3/9/66
VEH DES INT 3/10
STRUCTURES PEB GW3-18
STRUCTURES Hilderman 3-18
WEIGHTS S Rabeck 3-21
PROJ ENGR 3-22-66
REL GROUP 3-24

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE FRONT FACE
SCIMITAR ANTENA

SIZE B
CODE IDENT NO. 26512
LDW280-10926
SCALE NONE
SHEET 1.00 OF 3

ENG 77.1 9-64

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10926-11	E	CHANNEL	AL ALLOY EXTR	QQ-A-277	7075 T6511	DIE # 9950 X 8 1/2	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-10926
SCALE NONE
SHEET 2.00

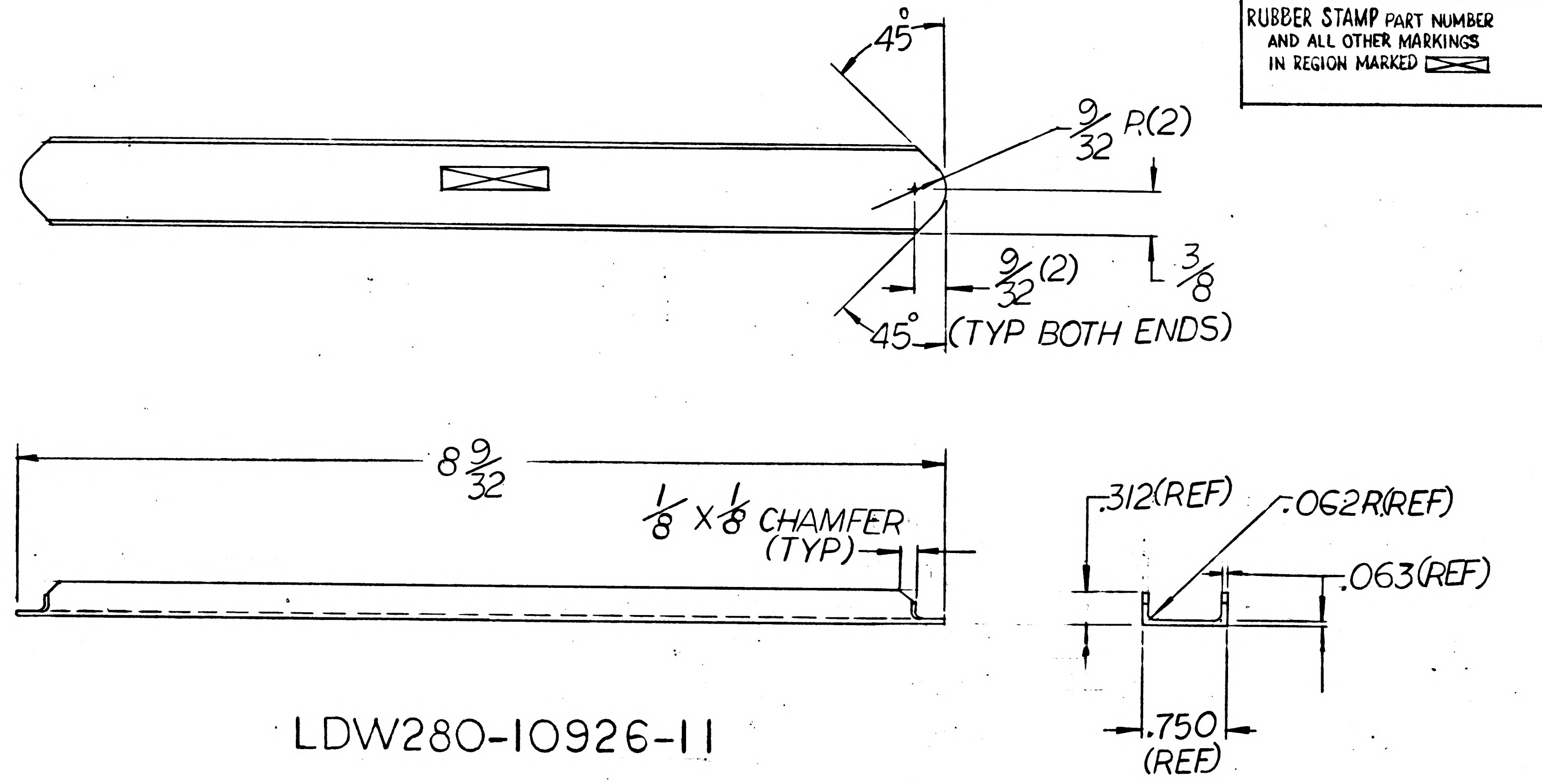
ENG 77.2 7-65

01

NAS 9-1100

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒	✓


45°
9/32 R.(2)
3/8
9/32 (2)
45° (TYP BOTH ENDS)
8 9/32
1/8 X 1/8 CHAMFER (TYP)
.312(REF)
.062R(REF)
.063(REF)
.750 (REF)

LDW280-10926-11

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10926

SCALE FULL

SHEET 3.00

ENG 73.1 6-64

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

~~DWG.~~ E.O. NO. LEO280
EO NO. 286
CONTROL INFO NO. LDW280A-0621

IN THE MODEL BLOCK OF THE DWGS. LISTED BELOW
THE N/A LDW280-53247 (WAS LDW280-28247)
FOR LM-3(33) ONLY.

DWG NO.	DASH NO.*	TITLE	MODULE	CHANGE NO.
✓ LDW280P10793	-1, -11, -12 -13, -15, -17 -18	NOTED	LM-3(33)	B1
✓ LDW280-10926	-11	↕	" "	A1
LDW280M10760	-1	NOTED	" "	A1

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: INCORRECT N/A FOR LM3

DESCRIPTION OF EO: FOR* N/A LDW280-53247 WAS LDW280-28247 FOR LM-3(33) ONLY.

GAEC EO RELEASE: B C LE 105

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LM3 (33)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK SCRAP — NOT REQ'D

APPROVED BY	JJP E1			~	JW		DMC UR
DATE	9-21-66			~	4/29		10-4-66
	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

10/3/66.

PRIORITY ✓

DRAWING TITLE: SEE DWG.

E.O. ~~DRAWING~~ NO. LEO280

EO NO. 286

ISSUED BY W. LEIFER X1441 9-22-66 SECTION VDI ~ CABIN GROUP NO. 335 PL 35

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

PART NO. LDW280-10927-13, -15 & -17

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LDW420-11262	LDW280H23235	SER# 16	1 EA
LDW420-11262		SER# 15	1 EA
LDW420-11262		SER# 14	1 EA
LEM		LEM-15(45)	2 EA
		LEM-14(44)	2 EA
		LEM-13(43)	2 EA
		LEM-12(42)	2 EA
		LEM-11(41)	2 EA
		LEM-10(40)	2 EA
		LEM-9(39)	2 EA
		LEM-8(38)	2 EA
		LEM-7(37)	2 EA
		LEM-6(36)	2 EA
		LEM-5(35)	2 EA
		LEM-4(34)	2 EA
		LEM-3(33)	2 EA
		LEM-2(32)	2 EA
		LTA-8(18)	2 EA
LEM	LDW280H23235	LTA-3(13)	2 EA
		GAEC SCH NO.	

PART NO. LDW280-10927-11 & -19

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LDW420-11262	LDW280H23235	SER#16	2 EA
LDW420-11262		SER#15	2 EA
LDW420-11262		SER#14	2 EA
LEM		LEM-15(45)	4 EA
		LEM-14(44)	4 EA
		LEM-13(43)	4 EA
		LEM-12(42)	4 EA
		LEM-11(41)	4 EA
		LEM-10(40)	4 EA
		LEM-9(39)	4 EA
		LEM-8(38)	4 EA
		LEM-7(37)	4 EA
		LEM-6(36)	4 EA
		LEM-5(35)	4 EA
		LEM-4(34)	4 EA
		LEM-3(33)	4 EA
		LEM-2(32)	4 EA
		LTA-8(18)	4 EA
LEM	LDW280H23235	LTA-3(13)	4 EA
		GAEC SCH NO. 31-3	

(5)

SH REV STATUS: FOP DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	B	B							
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -19

GRUMMAN REL INFO B

PRIM NO. 215 X(001) ME-18 3/2/9

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY H.KLONSKY 3-2-66
LAYOUT BY R.BONELLI
CHECKED BY M 3·3·66
GR LEADER J. PUSATERI 3/8/66
VEH DES INT 3/10
STRUCTURES 3/11
STRUCTURES 3-11
WEIGHTS 3-15
PROJ ENGR 3/15/66
REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

PLATES
ASCENT STAGE - CABIN FLOOR X215

SIZE B
CODE IDENT NO. 26512
LDW280-10927 B
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 9-64

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00 & 1.10						E.O. A1	IN MOD BLOCK QTY REQD FOR -13, -15 & -17 WAS 1 EA, FOR -11 & -19 WAS 2 EA. ADDED SH 1.10 SH 1.00 OF 4 WAS 1.00 OF 3.	LTA-3, -8, LEM-1 THRU LEM-6	NOT	REQD Rs	NISBET 7-8-66		
B	1	1.00 & 1.10							INC LEO 280-295	LM-7 THRU LM-15			N. OESTERHELD 11-18-68		
	2	1.00 1.10							INC LEO 280-471	LM-3 THRU LM-15					
	3	1.00 1.10		LFM54 A					INC LEO 280-787	LM-1 LM-3 THRU LM-15					
	4	1.00 1.10							INC LEO 280-1130	SER# 15 & 16					
	5	1.00 1.10							INC LEO 280-1128 BC	SER# 14					

CHG APPROVED

LTR	GROUP LDR	VEH.DES.INT.	STRUCTURES	STRUCTURES	WEIGHTS					
A										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10927	B
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10927-19	E	PLATE	AL ALLOY SH	QQ-A-250/12	7075-T6	.090 X 1 5/8 X 2 7/8	NONE	NONE	6B
		-17		SKIN				NOTE 2 X 2 3/4 X 4			5C
		-15		SKIN				NOTE 2 X 2 7/8 X 4			7C
		-13		PLATE				.090 X 3 X 4			5D
		LDW280-10927-11	E	SKIN	AL ALLOY SH	QQ-A-250/12	7075-T6	NOTE 2 X 3 1/2 X 4	NONE	NONE	7D

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10927

SCALE NONE SHEET 2.00

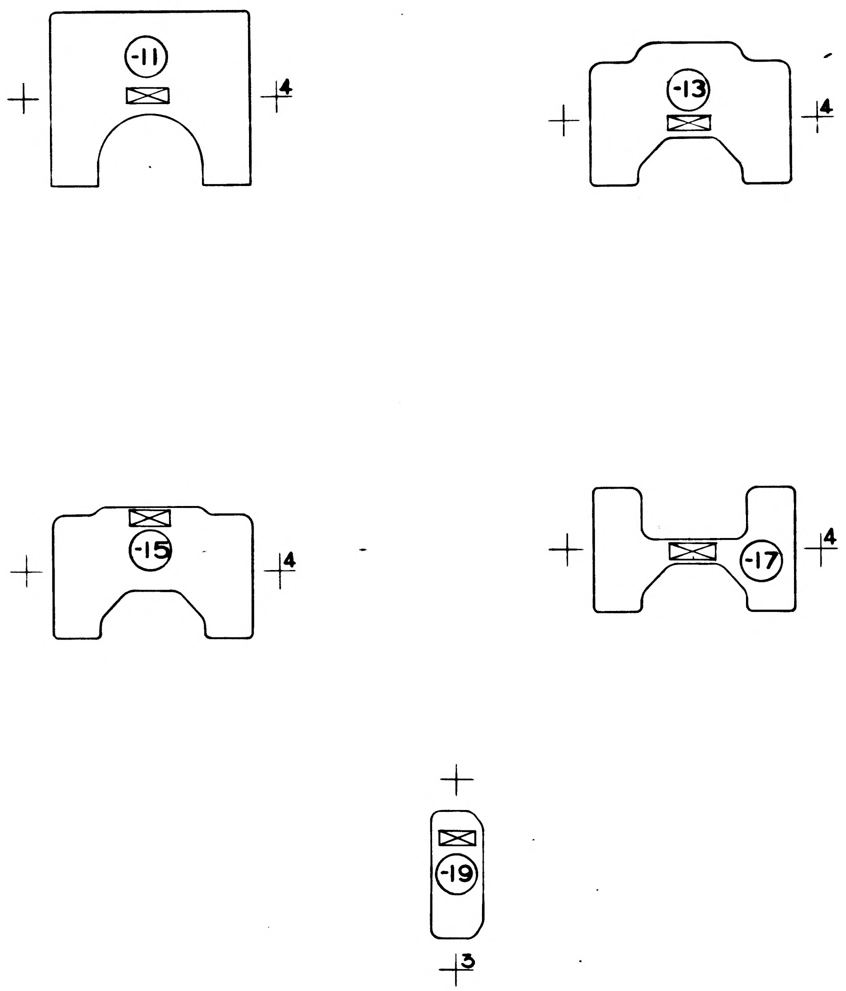
77.2 7-65

01

NAS 9-1100

LDW280-10927

NOTE
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. MATERIAL FOR -11, -15 & -17 TO BE .009 THICK, ALTERNATE MATERIAL MAY BE .016 TO BE SIZED TO .009 ±.002.



25
20

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

01

NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
LEM	SIZE D	CODE IDENT NO. 26512	LDW280-10927	
MODEL OR END ITEM	SCALE FULL			SHEET 3.00

FOR PHOTO REPRODUCTION

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280
EO NO. 1475
CONTROL INFO NO. LDW280B8049

IN MOD BLOCK
REMOVE LM-15(45) EFF FROM FOLLOWING PARTS:

DWG NO.	DASH NO.	TITLE	NEXT ASSY	QUANT. REQ'D	COMAT	CHANGE EO. №
✓ LDW280M10714	-5	HOUSING-BEARING	LDW280H23232	1	M	B4
✓ LDW280M10715	-1	HOUSING-BEARING	LDW280H23253	1	M	A4
✓ LDW280M10716	-1	BEARING	LDW280H54060	1	M	A3
✓ LDW280M10717	-3	PIN	LDW280H54060	1	M	A3
✓ LDW280M10719	-3	TRUSS	LDW280H54060	1	M	B5
✓ LDW280M10722	-1 & -2	CHANNEL	LDW280H23235	1 EA	M	C1
✓ LDW280M10723	-1	FITTING	LDW280H23234	2	M	C1
✓ LDW280M10724	-3	FITTING	LDW280H23234	1	M	C1
✓ LDW280M10825	-1	CHANNEL	LDW280H23273	1	M	C5
✓ LDW280P10966	-13	CHANNEL	LDW280H23334	1	NM	B1
✓ LDW280-10620	-11-1	WEB	LDW280H54060	1	M	B6
✓ LDW280-10621	-17	WEB	LDW280H54060	1	M	B7
✓ LDW280-10788	-11 & -13	WEB	LDW280H23234	1 EA	M	C1
	-15		LDW280H23236	1		
✓ LDW280-10816	-11	CHANNEL	LDW280H23236	1	M	B3
	-13 & -15			2 EA		
✓ LDW280-10817	-11 & -13	CHANNEL	LDW280H54060	2 EA	M	B1
✓ LDW280-10927	-11 & -19	SKIN	LDW280H23235	2 EA	M	C1
	-13, -15 & -17			1 EA		
LDW280-10955	-11	PLATE	LDW280H23234	1	M	B1
	-13-1		LDW280H54060	1		
LDW280-10979	-11	DOUBLER	LDW280H54060	1	M	B1
LDW280-11036	-15 & -17	BUMPER	LDW280H54060	2 EA	M	B3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD3587 PKG12 CCA1821 AMD#1 (5)

REASON FOR EO: PARTS NOT REQD FOR AAP

DESCRIPTION OF EO: (NOTED ABOVE)

GAEC EO RELEASE: 7-9-69
JK 7/10/69

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK SCRAP ✓

	VDI	~~SUPPORT~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY					CW		Gal	Bott
DATE	7/2/69	7/9/69		7-2-69	7-8-69		7/8/69	7-10-69

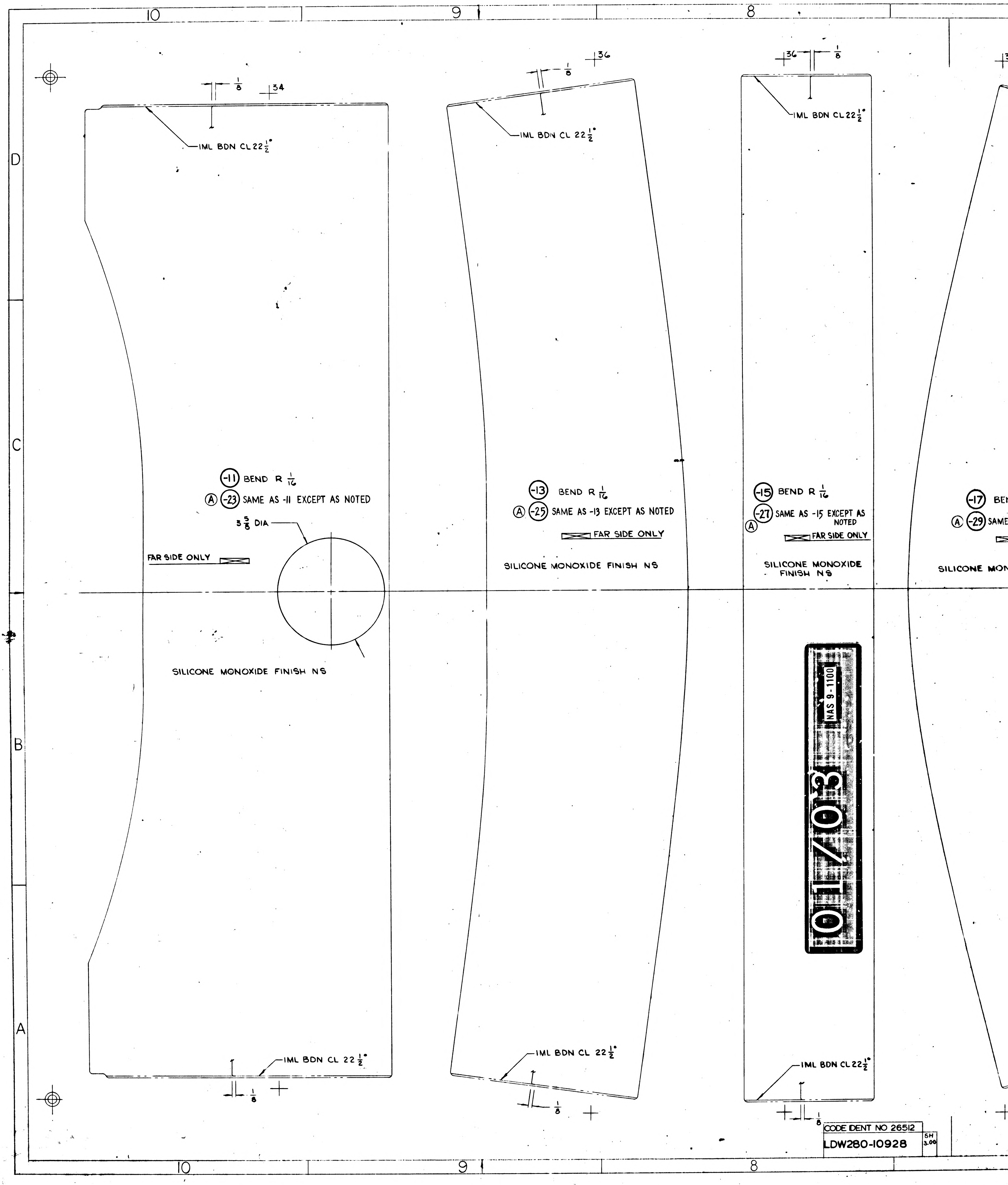
PRIORITY: C

DRAWING TITLE: (NOTED ABOVE)

DRAWING NO.: LEO280-

EO NO. 1475

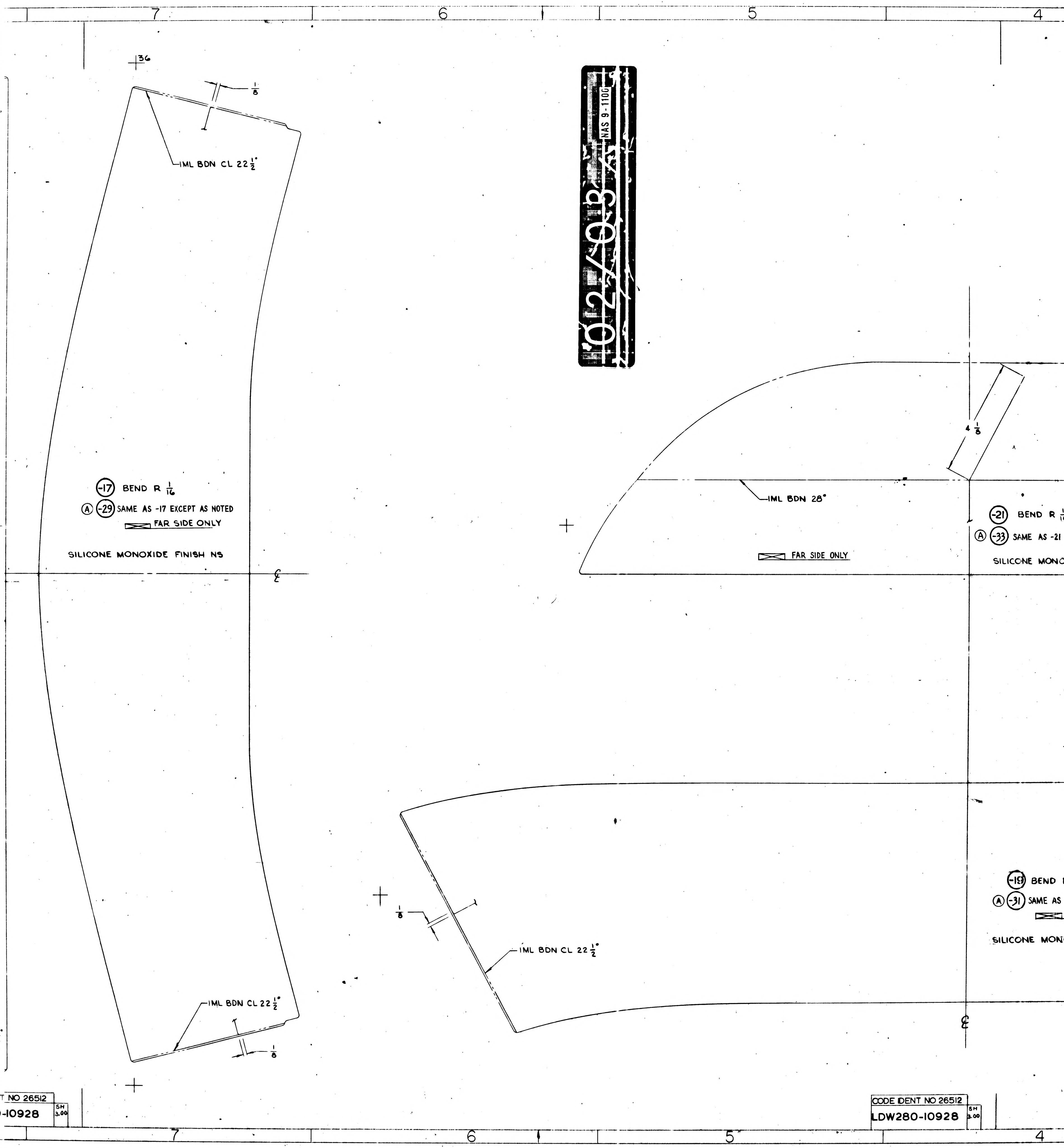
7-25-69
ISSUED BY P MARTELLO X86048 SECTION VEH DES INT GROUP NO. 335 PL 25



10
9
8
D
C
B
A
1/8
34
36
IML BDN CL 22 1/2°
-11 BEND R 1/16
A -23 SAME AS -11 EXCEPT AS NOTED
3 5/8 DIA
FAR SIDE ONLY
SILICONE MONOXIDE FINISH NS
-13 BEND R 1/16
A -25 SAME AS -13 EXCEPT AS NOTED
FAR SIDE ONLY
SILICONE MONOXIDE FINISH NS
-15 BEND R 1/16
A -27 SAME AS -15 EXCEPT AS NOTED
FAR SIDE ONLY
SILICONE MONOXIDE FINISH NS
-17 BEN
A -29 SAME
SILICONE MON
01/03
NAS 9-1100

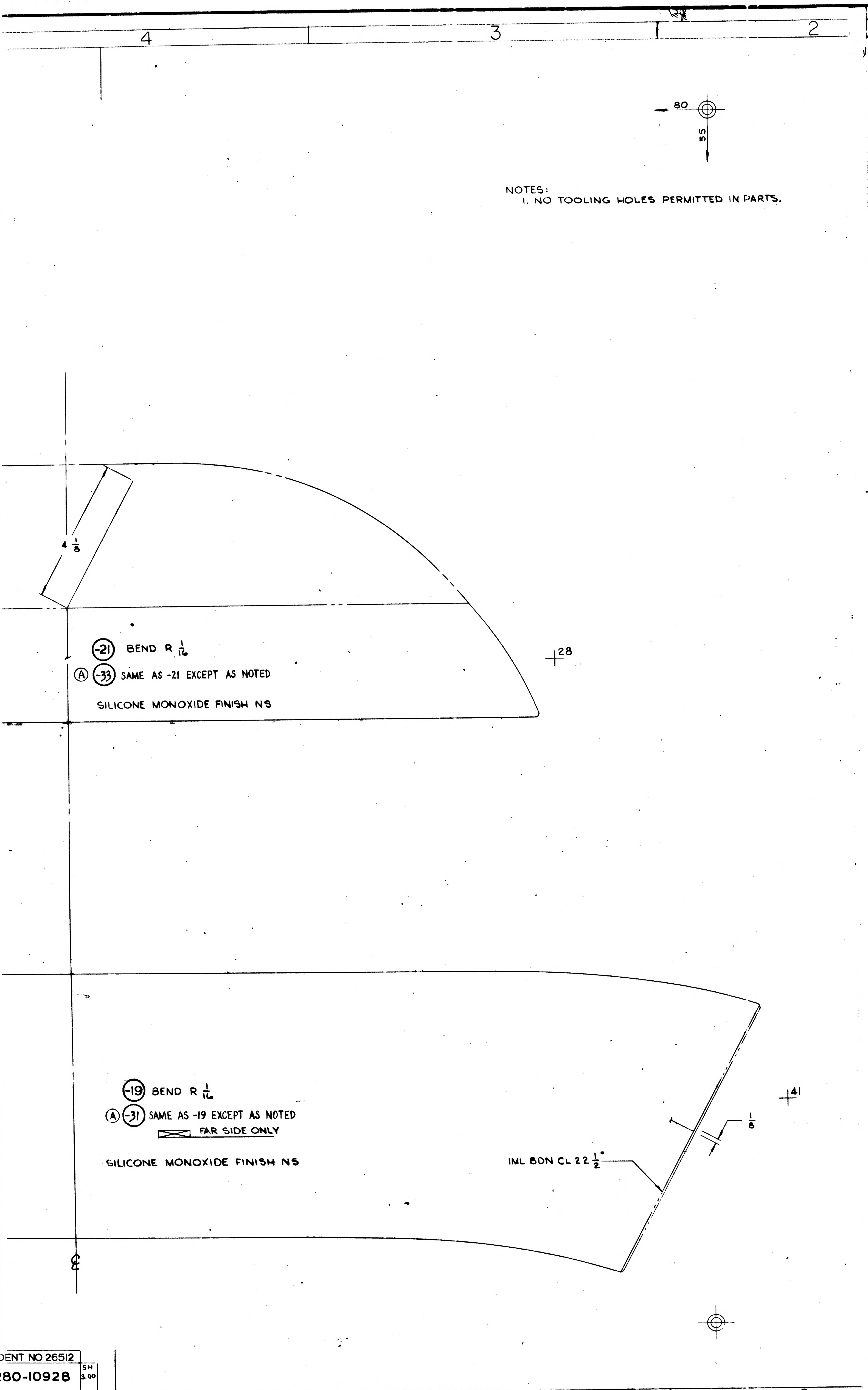
CODE IDENT NO 26512
LDW280-10928
SH 3.00

02/03 NAS 9-1100


7
6
5
4
36
1/8
IML BDN CL 22 1/2°
(-17) BEND R 1/16
(A) (-29) SAME AS -17 EXCEPT AS NOTED
FAR SIDE ONLY
SILICONE MONOXIDE FINISH NS
℄
IML BDN CL 22 1/2°
1/8
4 1/8
IML BDN 28°
FAR SIDE ONLY
(-21) BEND R 1/1
(A) (-33) SAME AS -21
SILICONE MONO
(-19) BEND
(A) (-31) SAME AS
SILICONE MON
1/8
IML BDN CL 22 1/2°
℄

T NO 26512
-10928 SH 3.00

CODE IDENT NO 26512
LDW280-10928 SH 3.00


4
3
2
80
55
4 1/8
(-21) BEND R 1/16
(A) (-33) SAME AS -21 EXCEPT AS NOTED
SILICONE MONOXIDE FINISH NS
28
(-19) BEND R 1/16
(A) (-31) SAME AS -19 EXCEPT AS NOTED
FAR SIDE ONLY
SILICONE MONOXIDE FINISH NS
IML BDN CL 22 1/2°
1/8
41
℄
DENT NO 26512
80-10928
SH 3.00

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.

03/03 NAS 9-1100

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ [illegible].	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 40x106
PRINTING INFO ONLY
FULL SIZE SHEET AREA [illegible] = 26.5 SQ. FT.
[illegible] = 6.565 SQ. FT.
PRINT TRIM LINE

D
C
B
A

LDW280-10928 A
LDW280-10928 A

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
	SIZE K	CODE IDENT NO. 26512	LDW280-10928	A
LEM MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

3/3
FOR PHOTO REPRODUCTION K3

LDW280-10928 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM126	LDW280-28182	LIA-8(18)	1 EA	LM	LDW280-28182	LIA-8(18)	1 EA.				
PART NO. LDW280-10928-23-1, -25-1, -27-1, -29-1, -31-1, -33-1		GAEC SCH NO. 30		PART NO. LDW280-10928-23 THRU -33		GAEC SCH NO. 30		PART NO.		GAEC SCH NO.	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	B	B	B		B				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO B	
LAST DASH NO. USED	-33-1	PRIM NO.	JK(001)
		215	MP-168 5/13/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	SHANLEY 3-1-66	RELIABILITY	
LAYOUT BY	SHANLEY 3-1-66		
CHECKED BY C.B.(B)			
GR.LEADER	J. PUSATERI 4-4		
VEH DES INT	BISHOFF 4-4		
STRUCTURES	AJP ~ FEB 4-4	PROJ ENGR	J. ALBER 4-8-66
STRUCTURES	HILDERMAN 4-4	REL GROUP	BOTTI 4-9-66
WEIGHTS	ROBESCH/BJL 4-8		

(E) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SKIN -
ASCENT STAGE CABIN
IMU BEAM SHIELD

SIZE B
CODE IDENT NO. 26512
LDW280-10928 B (B)
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

REV B CDR 5-8-68

SUPERSEDES LDW280-10928 NC 3-1-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	~~SH CHG LTR~~	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~CUST~~ APPD
												REWORK	SCRAP			
A	1	1.00, 1.10, 2.00 & 3.00								RETRACED NC, LAST REV NC D. PALMER 4-21-66 LOFTED MYLAR DWG WAS LOFTED VELLUM DWG ADDED SHEET 1.10 SH 1.00 OF 4 WAS SH 1.00 OF 3	NOTED	NOT	REQD.	PALMER 4-21-66		
	2	1.00 2.00 3.00							Ⓑ	IN F/D, L/M & M/B ADDED -23 THRU -33. IN M/B FOR -11 THRU -21; REMOVED LTA-8 (18) REQMTS.	NOTED	NC	-11 THRU -21	SHANLEY 5-25-66		
B	1	1.00 1.10 2.00 3.00			DCRF 323-1075A				EO-B1	REMOVED -11 THRU -21.	LM-1(31) LM-2(32)		✓	T. HOLLOWAY 23. APR. 68		
	2	3.00	D-2 D-3		1	✓			LEO280-500	ADDED NOTE 2.	LTA-8	✓				
	3	1.00 1.10 2.00 3.00	ALL ZONES		LFM126		✓		LCD 1021-33 O.K. Ⓡ	ADDED -23-1, -25-1, -27-1, -29-1, -31-1 & -33-1. N.Y.B.	LTA-8(18)	NOT	REQD			

FOR CONTINUATION OF REVISIONS SEE SHEET

ENG 77.3 5-64

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10928	B Ⓡ
SCALE NONE			SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10928-33-1	E	SKIN	MAKE FROM	LDW280-	11310-13-4	9 x 28	NONE	NONE	4C
		-31-1	E					10 x 41			4A
		-29-1	E					10 x 36			7C
		-27-1	E					6 x 36			8C
		-25-1	E					9 x 36			9C
		LDW280-10928-23-1	E	SKIN	MAKE FROM	LDW280-	11310-13-4	12 x 34	NONE	NONE	10C
		LDW280-10928-33	E	SKIN	MAKE FROM	LDW280-	11310	8¼ x 27⅞	NONE	NONE	4C
		-31	E					9½ x 40⅜			4A
		-29	E					9⅞ x 35⅛			7C
		-27	E					5¼ x 35⅞			8C
		-25	E					9 x 35⅝			9C
		LDW280-10928-23	E	SKIN	MAKE FROM	LDW280-	11310	1⅛ x 34	NONE	NONE	10C
		~~LDW280-10928-21~~	~~E~~	~~SKIN~~	~~MAKE FROM~~	~~LDW280-10870~~		~~8¼ x 27⅞~~	~~NONE~~	~~NONE~~	~~4C~~
		~~-19~~						~~9½ x 40⅜~~			~~4A~~
		~~-17~~						~~9⅞ x 35⅛~~			~~7C~~
		~~-15~~						~~5¼ x 35⅞~~			~~8C~~
		~~-13~~						~~9 x 35⅝~~			~~9C~~
		~~LDW280-10928-11~~	~~E~~	~~SKIN~~	~~MAKE FROM~~	~~LDW280-10870~~		~~11⅛ x 34~~	~~NONE~~	~~NONE~~	~~10C~~

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

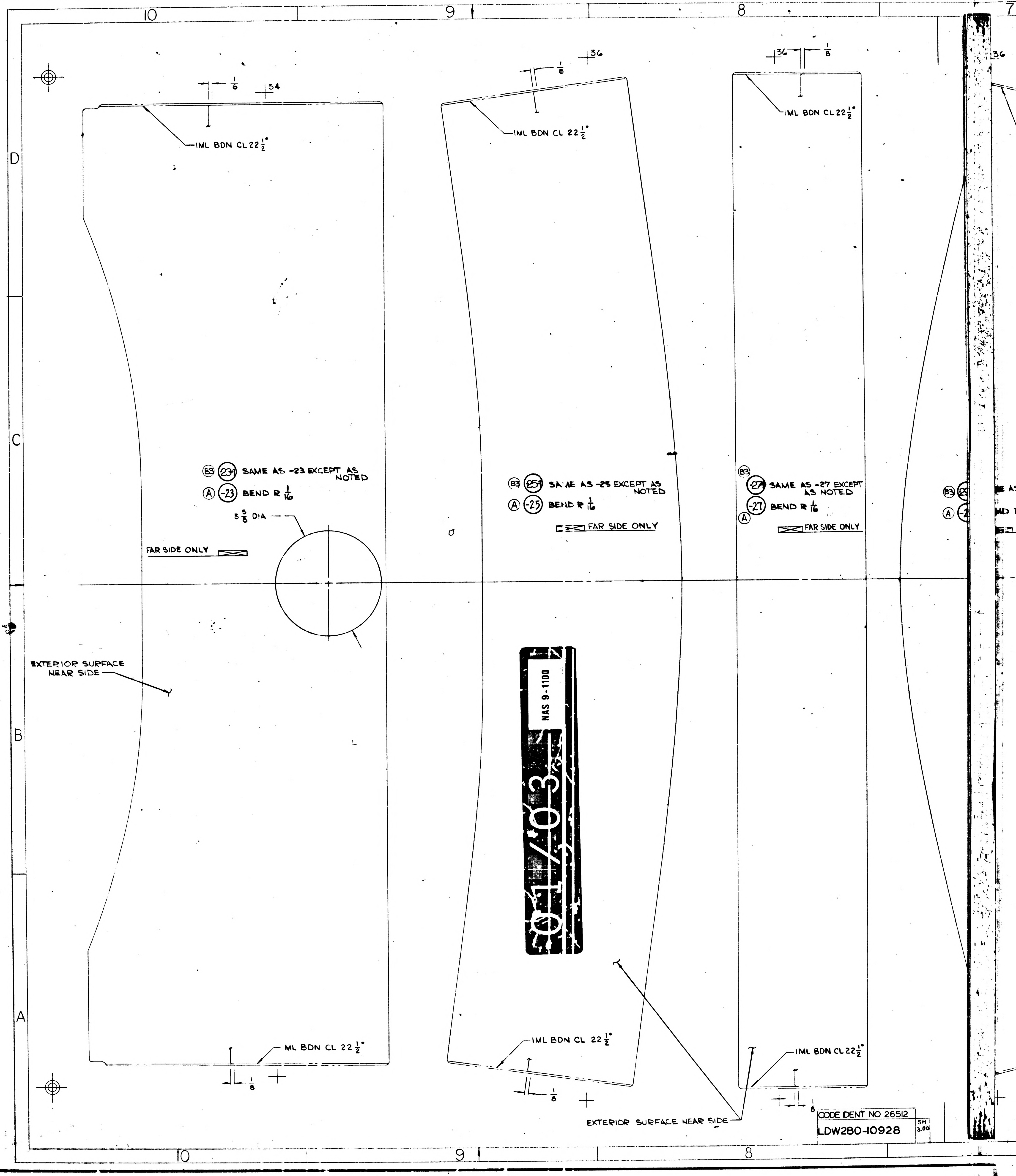
SIZE	CODE IDENT NO.		
B	26512	LDW280-10928	B

SCALE NONE SHEET 2.00

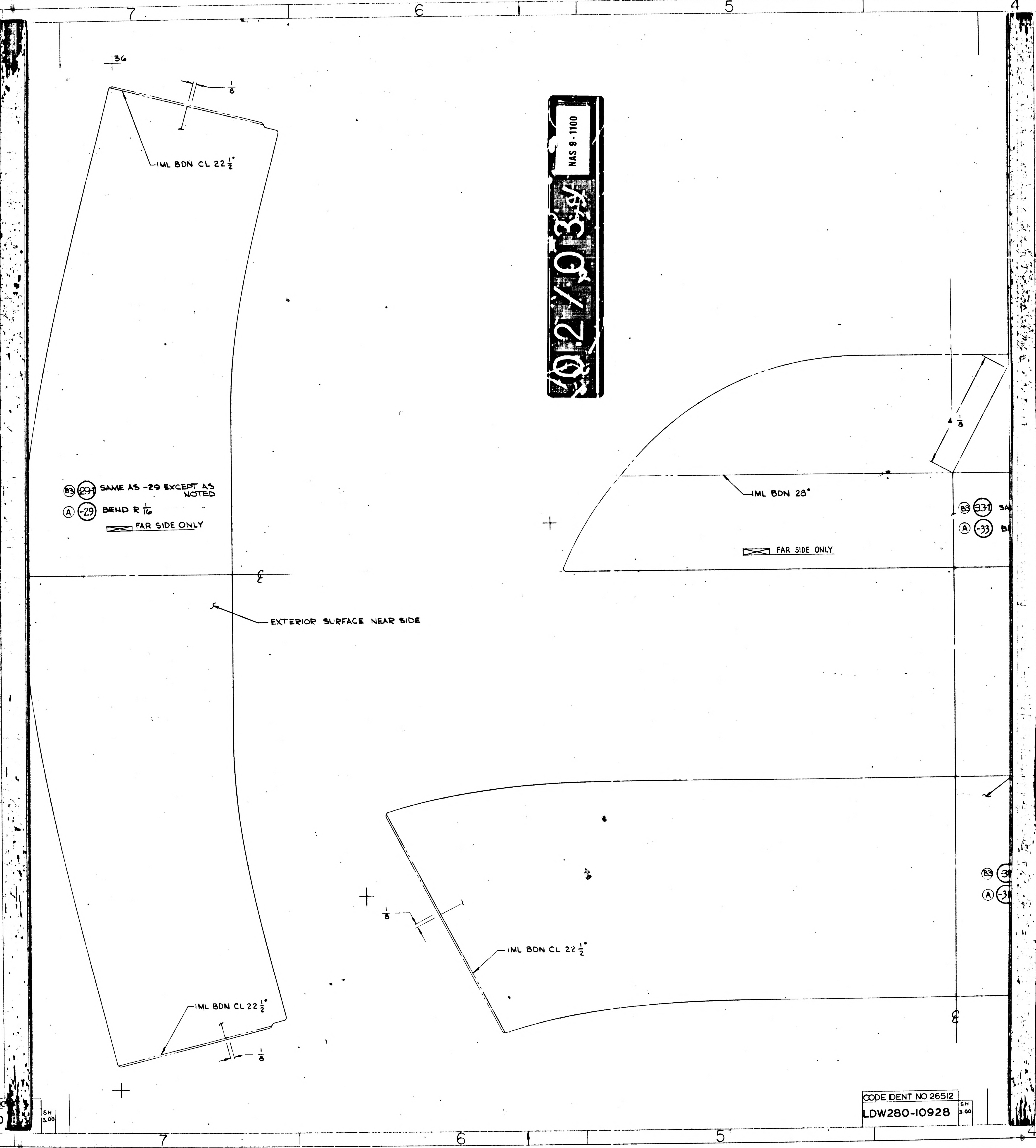
ENG 77.2 7-65

01

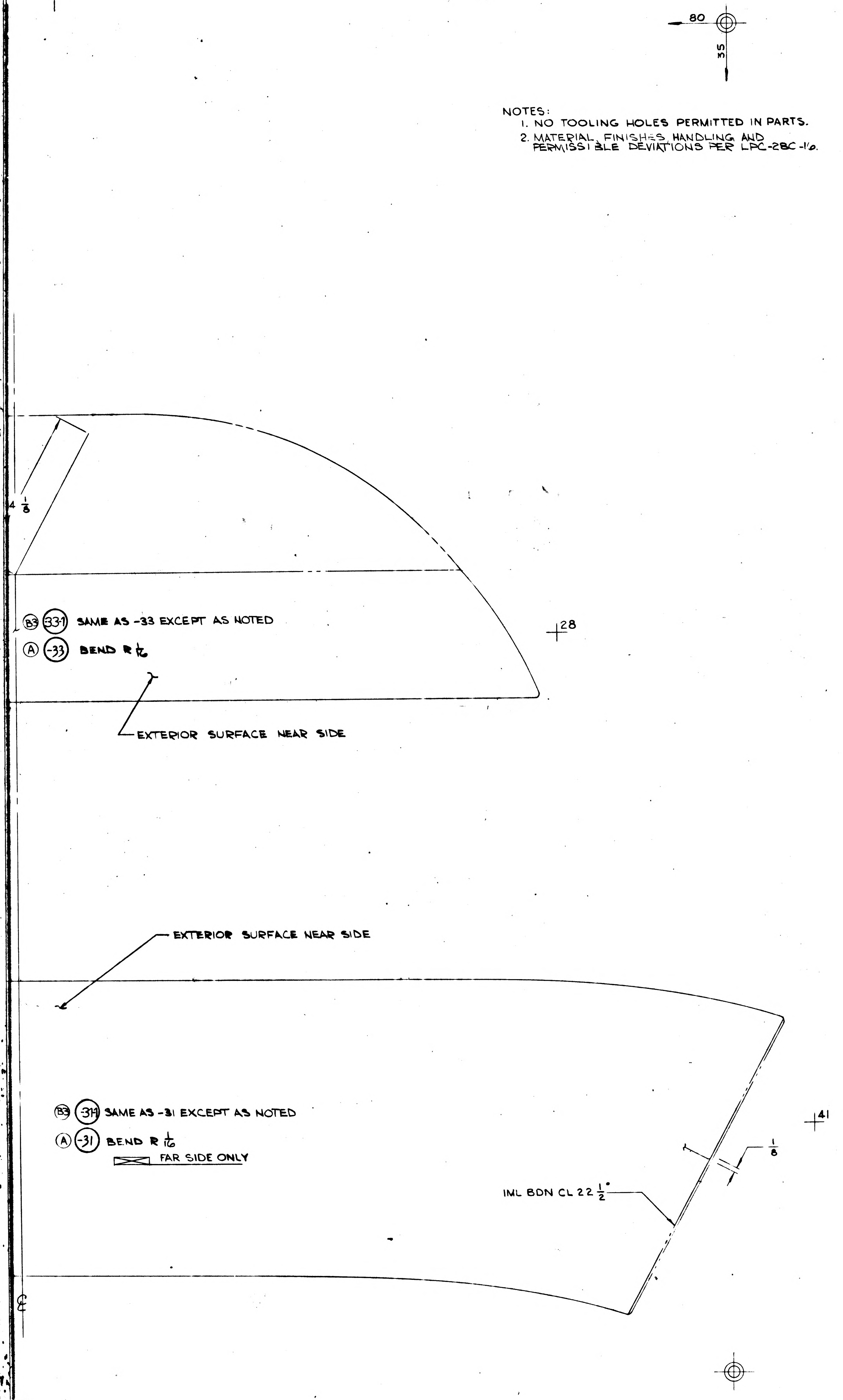
NAS 9-1100


10
9
8
7
D
C
B
A
1/8
34
36
IML BDN CL 22 1/2°
ML BDN CL 22 1/2°
B3 -23-1 SAME AS -23 EXCEPT AS NOTED
A -23 BEND R 1/16
5 5/8 DIA
FAR SIDE ONLY
EXTERIOR SURFACE NEAR SIDE
B3 -25-1 SAME AS -25 EXCEPT AS NOTED
A -25 BEND R 1/16
FAR SIDE ONLY
B3 -27-1 SAME AS -27 EXCEPT AS NOTED
A -27 BEND R 1/16
FAR SIDE ONLY
EXTERIOR SURFACE NEAR SIDE
01/03
NAS 9-1100

CODE IDENT NO 26512
LDW280-10928
SH 3.00

7
6
5
4
36
1/8
IML BDN CL 22 1/2°
B3 -29-1 SAME AS -29 EXCEPT AS NOTED
A -29 BEND R 1/16
FAR SIDE ONLY
℄
EXTERIOR SURFACE NEAR SIDE
IML BDN CL 22 1/2°
1/8
IML BDN 28°
FAR SIDE ONLY
4 1/8
B3 -33-1 SA
A -33 B
EXT
B3 -31
A -31
IML BDN CL 22 1/2°
1/8
℄
CODE IDENT NO 26512
LDW280-10928
SH 3.00
SH 3.00
-10
02/03
NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. MATERIAL, FINISHES, HANDLING AND PERMISSIBLE DEVIATIONS PER LPC-28C-1b.


80
35
4 1/8
(B3) (33-1) SAME AS -33 EXCEPT AS NOTED
(A) (-33) BEND R 1/16
EXTERIOR SURFACE NEAR SIDE
28
EXTERIOR SURFACE NEAR SIDE
(B3) (31-1) SAME AS -31 EXCEPT AS NOTED
(A) (-31) BEND R 1/16
FAR SIDE ONLY
41
1/8
IML BDN CL 22 1/2°
℄

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▨ ~~[illegible]~~.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 40x108
PRINTING INFO ONLY
FULL SIZE SHEET AREA (40x 108) = 31.5 SQ. FT.
½ SIZE SHEET AREA (¼ OF FULL) = 8 SQ. FT.
PRINT TRIM LINE

NAS 9-1100

03/03

LDW280-10928 B
LDW280-10928 B

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	K	26512	LDW280-10928	B
	SCALE FULL		SHEET 3.00	

(B) 3/3
FOR PHOTO REPRODUCTION
K3
ENG 73-8 6-64

SH 3.00

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
									RETRACED NO CHANGE - LAST REVISION NO CHANGE - SHEET 1 OF 4 WAS 1 OF 3 - ADDED SHEET 1.10 - LOFTED MYLAR WAS LOFTED VELLUM. FITZGERALD 7/19/66						
A	1	1.10 & 3.00	3A					EO-A1	IN F/D ON-25 ADDED (3) TOOLING HOLES #30	LEM 1 & 2 LTA 8	✓		FITZGERALD 7/19/66		
B	1	1.10 & 3.00	2B 5B					EO-B1	IN F/D ON-15 & -17 REMOVED AUXILIARY VIEW	LTA-8	NOT	REQD			
	2	1.00, 1.10 2.00						EO-B2	ON-27 ADDED FINISH #88	LEM 1 & 2 LTA 8	NOT	REQ'D			
	3	1.10 & 3.00	3B 4B 5B						ADDED LOCAL CUT BACKS IN FLANGE OF -15 & -17 AND ADDED PILOT HOLE IN -17 DR. #40(2)	LTA-8	✓				
	4	1.00 & 1.10							LDW280-10929-15, -17, -19 & -23 REVISED EFFECTIVITY FROM LTA 8, LEM 1 & 2 TO LTA 8 ONLY	LTA-8		✓			
	5	1.00, 1.10, 2.00 & 3.00	8C						ON-11 & -12 REMOVED LEM-1 & LEM-2 EFF ADDED -29	LTA-8 LEM. 1 & 2	NOT	REQD	RIHA 8-18-66		
C	1	1.00, 1.10, 3.00						LEO 280-267	FOR -11 & -12 CHEM-MILL TOLERANCE $^{+.006}_{-.000}$ WAS $^{+.004}_{-.000}$	NOT REQD	NOT	REQD	LECUN 3-17-67		
	2	1.00, 1.10						EO C2	ON -25 & -27 ADDED LEM-1 REQMTS FOR N/A LDW280-51184	LEM-1					
	3							EO C3	CANCELLED BY EO C5	NOT REQD					
	4	1.00, 1.10						EO C4	IN M/B N/A FOR -13, -21, -25, -27 & -29 WAS LDW280-28182 FOR LM-1 & LM-2	LM-1, LM-2					
	5	1.00, 1.10, 2.00 3.00	4B 6A 9C					EO C5	CANCELLED EO C3. REVISED TRIM -21 & -27. ADDED -22, -28, -31, -33, -35 & -37	LTA-8, LM-1 LM-2	✓				
	6	1.10, 3.00	8C 4A					EO C6	FOR -21, -25 & -27 ; .075-.080 (DRILL #48) 33 HOLES WAS 17 HOLES						
	7	1.00, 1.10						LEO280-428	FOR -13, -21, -27, -35, -37, -25 & -29 ADDED LM-3 THRU LM-15 EFFECTIVITY	LM-3 THRU LM-15	NOT	REQD	S.J.		

CHG APPROVED

LTR	GROUP LDR	VEH. DES. INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY
A	—					
B	—					
C	—					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10929	C
SCALE NONE		SHEET 1.10	

NG 77.16 3-66

01

NAS 9-1100

LM	LDW280-51182	LEM-15(45)	1
		THRU	
LM	LDW280-51182	LEM-1(31)	1
PART NO. LDW280-10929-41 ✓		30	
LFM-126	LDW280-28182	LTA-8(18)	1EA
LM	LDW280-28182	LTA-8(18)	1EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10929-11,-12,-15,-17,-19,-22,-23,-28,-31,-33,-43 & -47		GAEC SCH NO. 30	

LDW280-10929 D

LFM

LM	LDW280-51182	LEM-15(45)	1
		THRU	
LM	LDW280-51182	LEM-1(31)	1
PART NO. LDW280-10929-39		30	
LM	LDW280-51182	LEM-15(45)	2
		THRU	
LM	LDW280-51182	LEM-1(31)	2
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10929-25		GAEC SCH NO. 30	

LFM-126	LDW280-28182	LTA-8(18)	2
LM	LDW280-28182	LTA-8(18)	2
PART NO. LDW280-10929-45 ✓			
LM	LDW280-51182	LM-15(45)	1
		THRU	
LM	LDW280-51182	LM-2(32)	1
PART NO. LDW280-10929-51			
LM	LDW280-51182	LEM-15(45)	2
		THRU	
LM	LDW280-51182	LEM-1(31)	2
LM	LDW280-28182	LTA-8(18)	2
PART NO. LDW	280-10929-29	30	
LFM-126	LDW280-28182	LTA-8(18)	1
LM	LDW280-51182	LEM-1(31)	1
LM	LDW280-28182	LTA-8(18)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR FND ITEM
PART NO. LDW280-10929-13 ✓		GAEC SCH NO. 30	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	1.11		2.00	3.00			
REV	D	C	D		D	D			
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	AC	GRUMMAN REL INFO D
		PRIM NO. 215 · JK(001) MR 16 D-5/13/8
LAST DASH NO. USED	-51	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO.	NAS 9-1100	LINE ITEM	# 1
DRAWN BY	F. SHANLEY 3-1-66	WEIGHTS	ROBESCH 4/8 RV
LAYOUT BY	F. SHANLEY 3-1-66		
CHECKED BY			
GR LEADER	J. PUSATERI 4/4		
VEH. DES. INT	W. BISCHOFF 4/4		
STRUCTURES	FEB GG 4/4	PROJ ENGR	ALBER RMC 4/8/66
STRUCTURES	HILDERMAN 4/4	REL GROUP	A. CARAMANICA 4/11

DOCUMENTATION TYPE II

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TUBE
ASCENT STAGE CABIN
IMU BEAM THERMAL SHIELD

SIZE	CODE IDENT NO.		
B	26512	LDW280-10929	D
SCALE	NONE	SHEET 1.00 OF 5	

ENG 77.1 12-65

REV D CDR 5-8-68 THIS DWG SUPERSEDES LDW280-10929 NO CHG 3-1-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	APPD
											REWORK	SCRAP			
C	8	1.00,1.11 2.00,3.00	7A 10C					EO C8	REMOVED -35 -37 ADDED -39 -41 ADDED SH 1.11	LM-1, LM-2		-35 -37	LECUN 3-17-67 S.J.	FHR	
	9	1.00,1.11						LEO 280-444	ON INCORP. OF EO C7 REMOVE -21 -22 ON INCORP. OF EO C8 ADD EFFECT. LM-3 THRU LM-15	LM-3 THRU LM-15	NOT	REQD			
	10	1.11, 3.00							REF LEO 280-267 CHEM-MILL THICKNESS $.016^{+.006}_{-.000}$ WAS $.017^{+.002}_{-.001}$	NOT REQD					
	11	1.11, 3.00	8C 4A						REF EO C6 -21 & -27 SHOULD BE -37 & -35. REMOVED FROM -25 & -41 N/A LDW280-51184 LM1 EFF	LTA-8, LM-1 LM-2	✓				
	12	1.11							REF LEO 280-444 REMOVE -21 & -22 SHOULD BE -21 & -27	LM-3 THRU LM-15	NOT	REQD			
	13	1.11						ⓟ	REF EO C4 -21 & -27 NOT APPLICABLE.	NOT REQD					
D	1	1.00 1.11 2.00 3.00	3,5,6 8A 10B					EO D1	REMOVED LTA-8 FROM -21, -25 & -27 IN MOD/BLK. ADDED -43, -45 & -47.	LTA-8	NOT	REQD	HERB. SCHWETER 4-22-68		
	2	1.00 1.11 2.00 3.00	6C				✓	EO D2	CREATED -49 FOR LM-2 (32) THRU LM-15 (45) N/A LDW280-51182. REMOVED LM-2 (32) THRU LM-15 (45) FROM -13.	LM-2 THRU LM-15		✓			
	3	1.00 1.11 2.00 3.00	3A 5,6, 7C				✓	EO D3	IN FLD/DWG, B/M & MOD/BLK ADDED -51. REMOVED -49. ADDED NOTE 2.			-49			
	4	1.11 3.00	5,8 11C				✓	EO D4	ON -39 & -41 IN FLD/DWG REVISED TRIM (4 PLACES)	LM-6 THRU LM-15	✓				
	5	1.00 1.11 2.00 3.00	7A 10B	LFM-126		✓		LCD 1021-33 OK ⓛ	ON -11, -12, -13, -15, -17, -19, -22, -23, -28, -31, -33, -43, -45 & -47 ADDED END ITEM LFM-126 REQMTS	LTA-8	NOT	REQD		5/10/68	

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	WEIGHTS	RELIABILITY	THERMO
C	—					
D	FHR 5/6/68	5/1/68	5/10/68			

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10929	D

SCALE NONE SHEET 1.11

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10929-51	E	ANGLE	AL ALLOY SH	QQ-A-250/5	ALCLAD 2024	.040 x 3 x 30	T42	88	6C
		-45		CHANNEL				.020 x 11 x 29			3A
		-43		STRAP				.020 x 2 x 18			6A
		-41						.020 x 2 x 36			10C
		-39						.020 x 2 x 36			7A
		-33						.020 x 2 x 4			4B
		-31						.020 x 2 x 4			4B
		-28						.020 x 2 x 18			9B
		-22		STRAP	AL ALLOY SH	QQ-A-250/5	ALCLAD 2024	.020 x 2 x 18	T42		6A
		-29		TUBE	AL ALLOY	WW-T-700/3	2024-T3	5/8 OD x .035 x 28¼	NONE		8C
		-47		STRAP	AL. ALLOY	QQ-A-250/5	ALCLAD 2024	.020 x 2 x 18	T42		10B
		-25		CHANNEL				.020 x 10½ x 28½			5A
		-23		FRAME				.032 x 9 x 30¼			4C
		-19		STRAP				.010 x 1¾ x 33½			10A
		-17		ANGLE				.020 x 8¼ x 28¾			3B
		-15		ANGLE				.020 x 8¼ x 28½			6B
		-13		ANGLE	AL. ALLOY	QQ-A-250/5	ALCLAD 2024	.040 x 2⅜ x 29	T42		6C
		-12		TUBE	AL. ALLOY	WW-T-700/3	2024-T3	5/8 OD x .035 x 30½			10C
		LDW280-10929-11	E	TUBE	AL. ALLOY	WW-T-700/3	2024-T3	5/8 OD x .035 x 30½		88	10C

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030
CM	CHEM-MILL	LSP14-26100
T42	AL-HEAT TREAT	MIL-H-6088

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10929	D

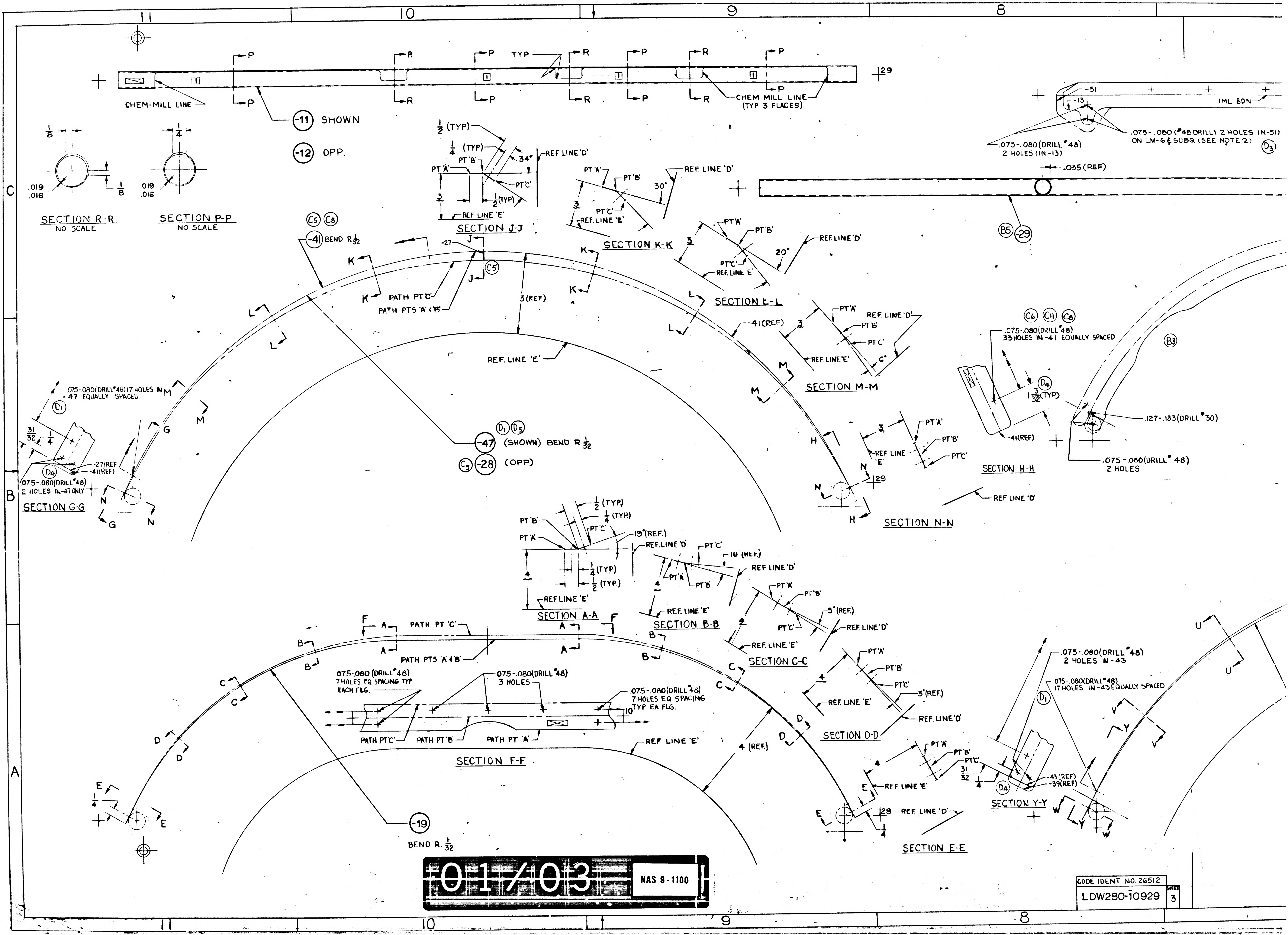
SCALE NONE

SHEET 2.00

ENG 77.2 7-66

01

NAS 9-1100


11
10
9
8
C
B
A
CHEM-MILL LINE
CHEM MILL LINE (TYP 3 PLACES)
TYP
P
R
29
-11 SHOWN
-12 OPP.
SECTION R-R
NO SCALE
SECTION P-P
NO SCALE
.019
.016
1/8
1/4
1/2 (TYP)
1/4 (TYP)
34°
REF LINE 'D'
PT 'A'
PT 'B'
PT 'C'
REF LINE 'E'
SECTION J-J
30°
SECTION K-K
20°
SECTION L-L
6°
SECTION M-M
SECTION N-N
SECTION G-G
SECTION H-H
C5 C8
-41 BEND R 1/32
-27
PATH PT 'C'
PATH PTS 'A' & 'B'
3 (REF)
REF. LINE 'E'
-41 (REF)
.075-.080 (DRILL #48) 17 HOLES IN -47 EQUALLY SPACED
D1
31/32
-27 (REF)
-41 (REF)
D4
.075-.080 (DRILL #48) 2 HOLES IN -47 ONLY
D1 D5
-47 (SHOWN) BEND R 1/32
C5 -28 (OPP)
-51
-13
IML BDN
.075-.080 (DRILL #48) 2 HOLES (IN -13)
.075-.080 (#48 DRILL) 2 HOLES IN -51) ON LM-6 & SUBQ (SEE NOTE 2)
D3
.035 (REF)
B5 -29
C6 C11 C8
.075-.080 (DRILL #48) 33 HOLES IN -41 EQUALLY SPACED
D4
1 3/32 (TYP)
-41 (REF)
B3
.127-.133 (DRILL #30)
.075-.080 (DRILL #48) 2 HOLES
REF LINE 'D'
19° (REF.)
10 (REF.)
1/2 (TYP.)
SECTION A-A
SECTION B-B
5° (REF)
SECTION C-C
3° (REF)
SECTION D-D
SECTION E-E
SECTION F-F
SECTION Y-Y
PATH PT 'C'
PATH PTS 'A' & 'B'
.075-.080 (DRILL #48) 7 HOLES EQ. SPACING TYP EACH FLG.
.075-.080 (DRILL #48) 3 HOLES
.075-.080 (DRILL #48) 7 HOLES EQ. SPACING TYP EA FLG.
PATH PT 'C'
PATH PT 'B'
PATH PT 'A'
REF LINE 'E'
4 (REF)
-19
BEND R. 1/32
.075-.080 (DRILL #48) 2 HOLES IN -43
.075-.080 (DRILL #48) 17 HOLES IN -43 EQUALLY SPACED
D1
-43 (REF)
-39 (REF)
D4
U
V
W
Y

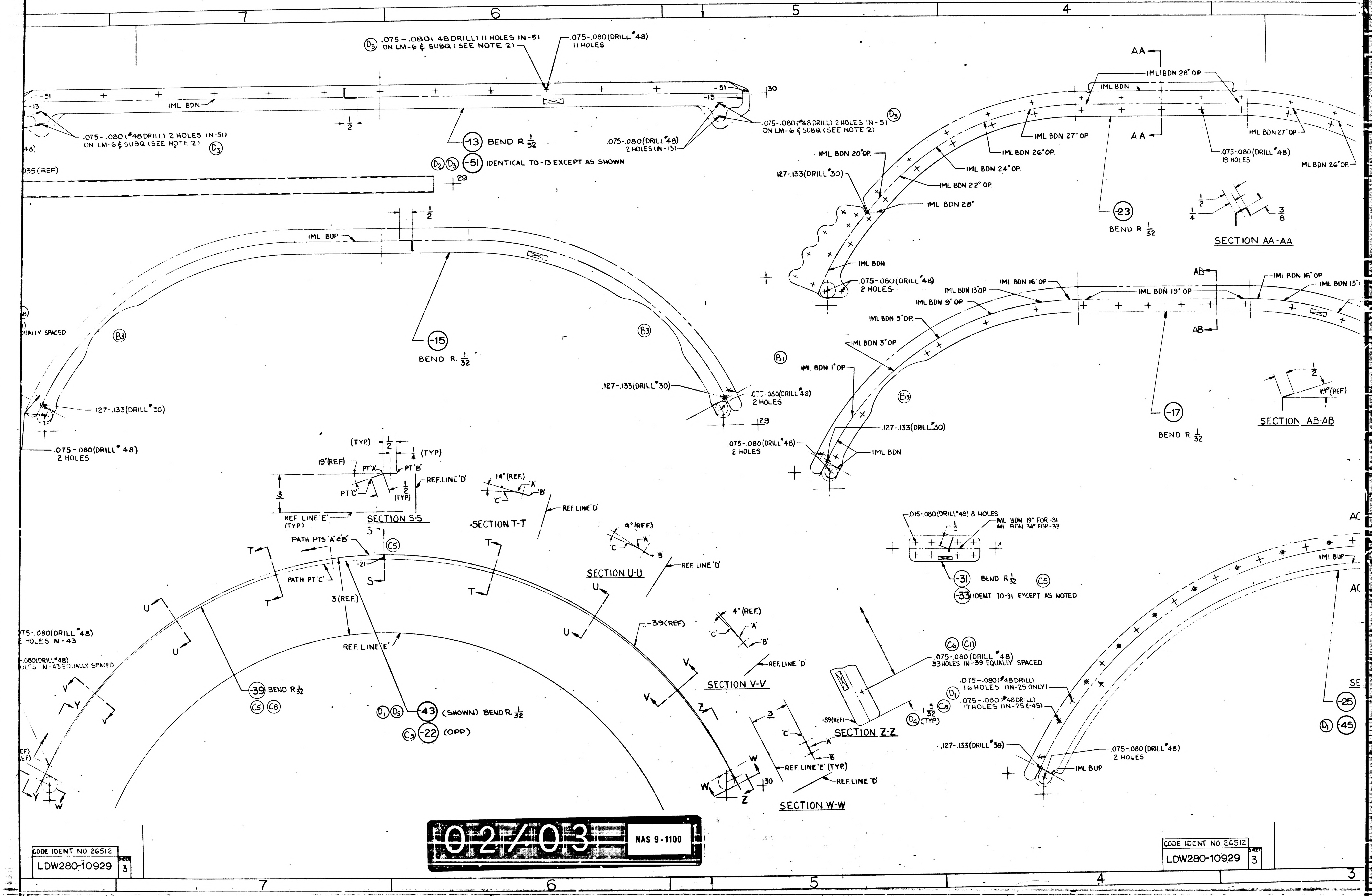
01/03

NAS 9-1100

CODE IDENT NO. 26512

LDW280-10929

SHEET 3


7
6
5
4
.075-.080(48 DRILL) 11 HOLES IN-51 ON LM-6 & SUBQ (SEE NOTE 2)
D3
.075-.080(DRILL #48) 11 HOLES
-51
-13
IML BDN
1/2
+30
.075-.080(#48 DRILL) 2 HOLES IN-51 ON LM-6 & SUBQ (SEE NOTE 2)
D3
-13 BEND R 1/32
.075-.080(DRILL #48) 2 HOLES (IN-13)
.075-.080(#48 DRILL) 2 HOLES IN-51 ON LM-6 & SUBQ (SEE NOTE 2)
D3
D2 D3 -51 IDENTICAL TO-13 EXCEPT AS SHOWN
.035(REF)
+29
1/2
IML BUP
B3
B3
-15
BEND R. 1/32
UALLY SPACED
127-.133(DRILL #30)
.075-.080(DRILL #48) 2 HOLES
.127-.133(DRILL #30)
.075-.080(DRILL #48) 2 HOLES
+29
AA
IML BDN 28° OP
IML BDN
IML BDN 27° OP
IML BDN 27° OP
AA
IML BDN 26° OP
.075-.080(DRILL #48) 19 HOLES
ML BDN 26° OP
IML BDN 20° OP
IML BDN 24° OP
127-.133(DRILL #30)
IML BDN 22° OP
IML BDN 28°
-23
BEND R. 1/32
1/2
1/4
3/8
SECTION AA-AA
IML BDN
.075-.080(DRILL #48) 2 HOLES
AB
IML BDN 16° OP
IML BDN 13° OP
IML BDN 16° OP
IML BDN 13°
IML BDN 19° OP
IML BDN 9° OP
IML BDN 5° OP
AB
IML BDN 3° OP
B1
IML BDN 1° OP
B3
1/2
19°(REF)
-17
BEND R. 1/32
SECTION AB-AB
.127-.133(DRILL #30)
.075-.080(DRILL #48) 2 HOLES
IML BDN
(TYP)
1/2
1/4 (TYP)
19°(REF)
PT 'A'
PT 'B'
REF. LINE 'D'
PT 'C'
1/2 (TYP)
3
REF LINE 'E' (TYP)
SECTION S-S
14°(REF.)
'A'
'B'
'C'
SECTION T-T
REF. LINE 'D'
9°(REF.)
'A'
'C'
'B'
SECTION U-U
REF. LINE 'D'
PATH PTS 'A' & 'B'
C5
S
T
T
-21
PATH PT 'C'
S
T
T
3(REF.)
U
U
U
U
-39(REF)
.075-.080(DRILL #48) 2 HOLES IN-43
.080(DRILL #48) HOLES IN-43 EQUALLY SPACED
REF. LINE 'E'
-39 BEND R 1/32
C5 C8
D1 D5 -43 (SHOWN) BEND R 1/32
C5 -22 (OPP)
V
Y
V
V
V
Y
W
4°(REF.)
'C'
'A'
'B'
REF. LINE 'D'
SECTION V-V
Z
W
W
Z
+30
3
'C'
'A'
'B'
REF. LINE 'E' (TYP)
REF. LINE 'D'
SECTION W-W
-39(REF)
1 5/32
C8
D4 (TYP)
SECTION Z-Z
.075-.080(DRILL #48) 8 HOLES
IML BDN 19° FOR-31
IML BDN 34° FOR-33
1/4
-31 BEND R 1/32
C5
-33 IDENT TO-31 EXCEPT AS NOTED
C6 C11
.075-.080 (DRILL #48) 33 HOLES IN-39 EQUALLY SPACED
D1
.075-.080(#48 DRILL) 16 HOLES (IN-25 ONLY)
.075-.080(#48 DRILL) 17 HOLES (IN-25 & -45)
.127-.133(DRILL #30)
.075-.080 (DRILL #48) 2 HOLES
IML BUP
IML BUP
AC
AC
SE
-25
D1 -45

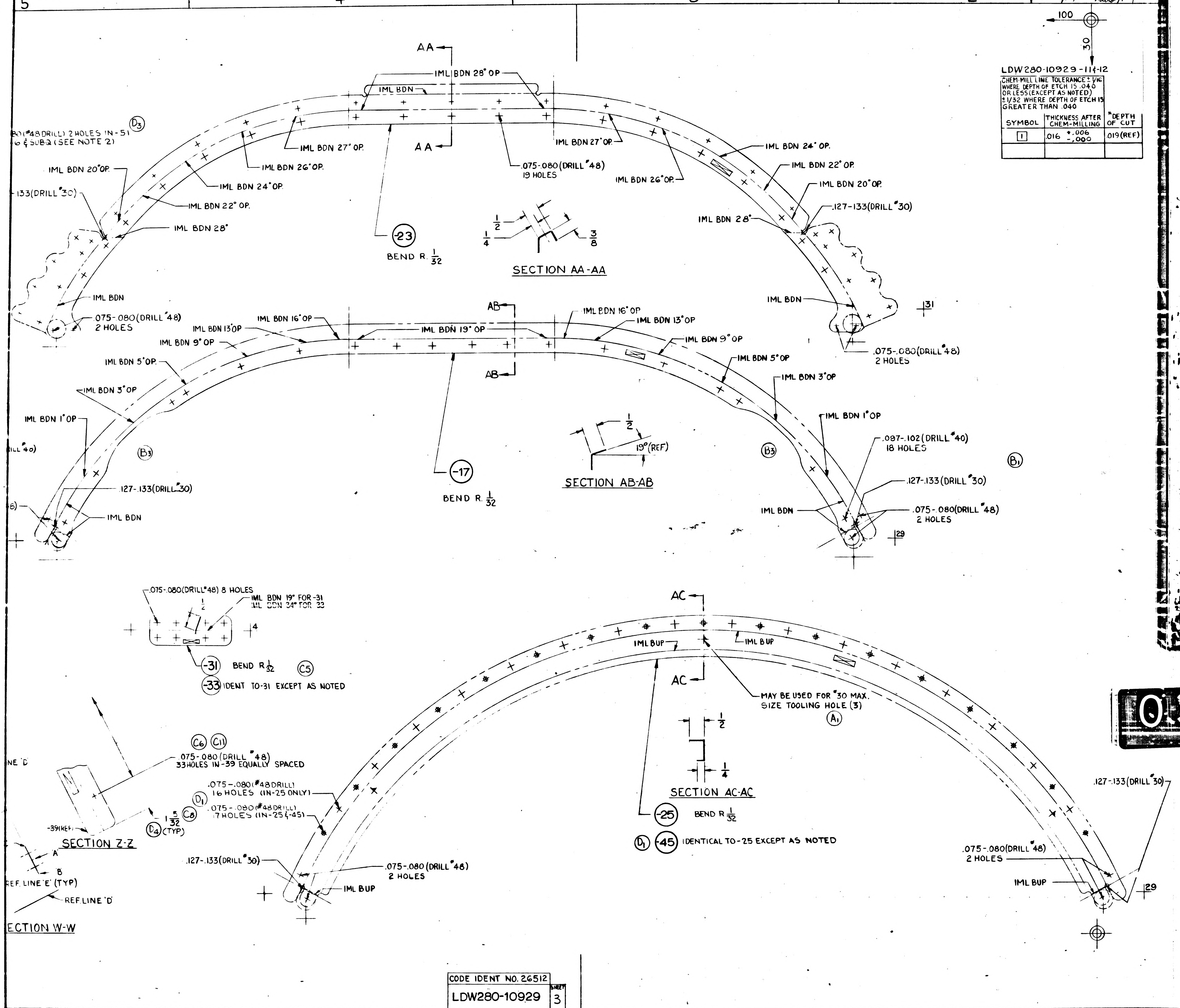
02/03

NAS 9-1100

CODE IDENT NO. 26512
LDW280-10929
SHEET 3

CODE IDENT NO. 26512
LDW280-10929
SHEET 3

Tasmo JP 1 Micro JP P



SECTION AA-AA
-23 BEND R. 1/32
IML BDN 28° OP
IML BDN
IML BDN 27° OP.
IML BDN 26° OP.
IML BDN 24° OP.
IML BDN 22° OP.
IML BDN 20° OP.
IML BDN 28°
.075-.080 (DRILL #48) 19 HOLES
.127-.133 (DRILL #30)
.075-.080 (DRILL #48) 2 HOLES
(#48 DRILL) 2 HOLES IN -51 & SUBQ (SEE NOTE 2)
D3
SECTION AB-AB
-17 BEND R. 1/32
IML BDN 19° OP
IML BDN 16° OP
IML BDN 13° OP
IML BDN 9° OP
IML BDN 5° OP.
IML BDN 3° OP
IML BDN 1° OP
19° (REF)
.097-.102 (DRILL #40) 18 HOLES
B1
B3
SECTION AC-AC
-25 BEND R 1/32
D1 -45 IDENTICAL TO -25 EXCEPT AS NOTED
IML BUP
MAY BE USED FOR #30 MAX. SIZE TOOLING HOLE (3)
A1
.075-.080 (DRILL #48) 8 HOLES
IML BDN 19° FOR -31
IML BDN 34° FOR 33
-31 BEND R 1/32
C5
-33 IDENT TO -31 EXCEPT AS NOTED
C6 C11
.075-.080 (DRILL #48) 33 HOLES IN -39 EQUALLY SPACED
.075-.080 (#48 DRILL) 16 HOLES (IN-25 ONLY)
.075-.080 (#48 DRILL) 17 HOLES (IN-25 & -45)
D1 C8 D4 (TYP)
1 5/32
-39 (REF)
SECTION Z-Z
REF. LINE 'E' (TYP)
REF LINE 'D'
SECTION W-W
100
30
31
29
4
1/2
1/4
3/8

LDW280-10929-11&-12

CHEM-MILL LINE TOLERANCE ± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED) ± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	*DEPTH OF CUT
1	.016 +.006 -.000	.019 (REF)

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS EXCEPT AS NOTED.
2. THESE HOLES TO BE DRILLED FROM EXISTING STRUCTURE LDW280-51182 ON LM-2 THRU LM-5 ONLY.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS 1/32	✓

DWG SIZE 34 X 118

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 126) = 32 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 8 SQ. FT.

PRINT TRIM LINE

03/03 NAS 9-1100

CODE IDENT NO. 26512
LDW280-10929 SHEET 3

LDW280-10929 D

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE J	CODE IDENT NO. 26512	LDW280-10929	D
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION K2'

3FR.

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280
EO NO. 1070
CONTROL INFO NO. LDW280B4094

REVISE N/A FOR THE FOLLOWING DWG & DASH NO'S
LDW280-56182 (WAS LDW280-51182) FOR LM-6(36) THRU LM-15(45)

DWG NO	DASH NO'S. *	TITLE	CHG. NO.
LDW280-11488	-11, -23, -24, -31, -41, -42 -43, -13-1, -19-1 & -37-1	FRAME ~ A/S ~ CABIN IMU BEAM THERMAL SHIELD	B2 ✓
LDW280-10929	-25, -29, -39, -41, & -51	TUBE ~ A/S ~ CABIN ~ IMU BEAM THERMAL SHIELD	E1 ✓
LDW280P10933	-11-1	RING ~ A/S ~ CABIN ~ THERMAL SHIELD	B2
LDW280-10930	-11, -17, -18, -19, -21 & -25	ANGLE ~ A/S ~ CABIN ~ RADAR ~ THERMAL	D2

SWIP

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD 3177 PKG. 3 (5)

REASON FOR EO: SWIP II

DESCRIPTION OF EO: FOR * REVISED N/A (WAS LDW280-51182)

GAEC EO RELEASE: 1C HF 7/25/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-6(36)	
		THRU	
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK NOT SCRAP REQD

APPROVED BY								
	JaP	Frank		H Kus			JaP	
DATE	7/13/68	7/16/68		7/10/68			7/19/68	7/25/68
	VDI	~~SUPPORT~~ THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY C
DRAWING TITLE NOTED
DRAWING NO. LEO 280
EO NO. 1070

7/11/68 ISSUED BY HERB DONNER X7033 SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-10930 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-51182	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
		LM-4(34)	1
		LM-3(33)	1
		LM-2(32)	1
	LDW280-51182	LM-1(31)	1
LM			
PART NO. LDW280-10930-21			

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET								
REV								
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED

LAST DASH NO. USED

GRUMMAN REL INFO

PRIM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO.

LINE ITEM

DOCUMENTATION TYPE

DRAWN BY

LAYOUT BY

CHECKED BY

PROJ ENGR

REL GROUP

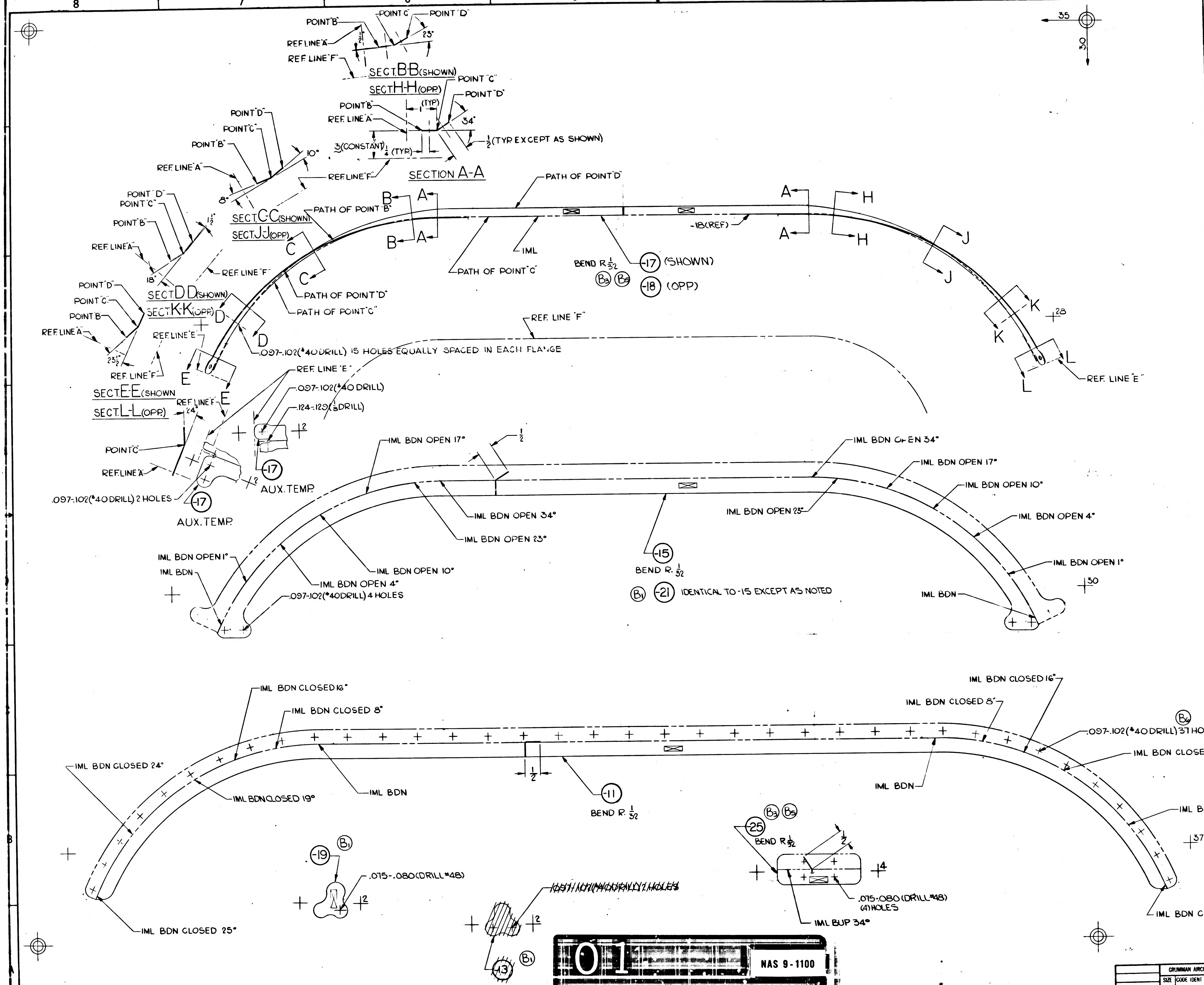
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10930	B
SCALE	NONE	SHEET 1.01 OF	

ENG 77.1 12-65

01

NAS 9-1100


8
7
6
5
4
3
2
1
POINT "B"
POINT "C"
POINT "D"
REF. LINE "A"
REF. LINE "F"
1/2
23°
SECT. B-B (SHOWN)
SECT. H-H (OPP)
POINT "C"
POINT "D"
POINT "B"
REF. LINE "A"
1 (TYP)
34°
3 (CONSTANT)
1/4 (TYP)
1/2 (TYP EXCEPT AS SHOWN)
REF. LINE "F"
SECTION A-A
POINT "D"
POINT "C"
POINT "B"
10°
REF. LINE "A"
8°
REF. LINE "F"
SECT. C-C (SHOWN)
SECT. J-J (OPP)
POINT "D"
POINT "C"
POINT "B"
1 1/2°
REF. LINE "A"
18°
REF. LINE "F"
SECT. D-D (SHOWN)
SECT. K-K (OPP)
POINT "D"
POINT "C"
POINT "B"
REF. LINE "A"
23 1/2°
REF. LINE "E"
REF. LINE "F"
SECT. E-E (SHOWN)
SECT. L-L (OPP)
REF. LINE "F"
24°
POINT "C"
REF. LINE "A"
.097-.102 (#40 DRILL) 2 HOLES
-17
AUX. TEMP.
REF. LINE "E"
.097-.102 (#40 DRILL)
.124-.129 (1/8 DRILL)
2
-17
AUX. TEMP.
PATH OF POINT "D"
PATH OF POINT "B"
B
A
B
A
C
C
D
D
E
E
PATH OF POINT "C"
PATH OF POINT "D"
PATH OF POINT "C"
IML
BEND R 1/32
B3 B5
-17 (SHOWN)
-18 (OPP)
-.18 (REF)
A
A
H
H
J
J
K
K
L
L
28
REF. LINE "E"
REF. LINE "F"
.097-.102 (#40 DRILL) 15 HOLES EQUALLY SPACED IN EACH FLANGE
IML BDN OPEN 17°
1/2
IML BDN OPEN 34°
IML BDN OPEN 17°
IML BDN OPEN 10°
IML BDN OPEN 4°
IML BDN OPEN 1°
IML BDN
30
IML BDN OPEN 23°
IML BDN OPEN 34°
IML BDN OPEN 23°
-15
BEND R. 1/32
B1 -21 IDENTICAL TO -15 EXCEPT AS NOTED
IML BDN OPEN 1°
IML BDN
IML BDN OPEN 10°
IML BDN OPEN 4°
.097-.102 (#40 DRILL) 4 HOLES
IML BDN CLOSED 16°
IML BDN CLOSED 8°
IML BDN CLOSED 16°
IML BDN CLOSED 8°
B6
.097-.102 (#40 DRILL) 37 HOLES
IML BDN CLOSED 19°
IML BDN CLOSED 24°
IML BDN CLOSED 19°
IML BDN
1/2
-11
BEND R. 1/32
IML BDN
IML BDN CLOSED 24°
37
IML BDN CLOSED 25°
IML BDN CLOSED 25°
-19 B1
.015-.080 (DRILL #48)
2
~~.097-.102 (#40 DRILL) 2 HOLES~~
2
-13 B1
-25 B3 B5
BEND R 1/32
1/2
4
.075-.080 (DRILL #48) (4) HOLES
IML BUP 34°
35
30
01
NAS 9-1100

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES .031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-10930 B

R 10/65

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
	SIZE E	CODE IDENT NO. 26512	LDW280-10930	R B
LEM MODEL OR END ITEM	SCALE FULL			SHEET 3.00

FOR PHOTO REPRODUCTION

LDW280-10930C

LFM

PART NO. LDW280-10930-19

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-51182	LM-15 (45)	2
		LM-14(44)	2
		LM-13(43)	2
		LM-12(42)	2
		LM-11(41)	2
		LM-10(40)	2
		LM-9 (39)	2
		LM-8 (38)	2
		LM-7 (37)	2
		LM-6(36)	2
		LM-5(35)	2
		LM-4(34)	2
		LM-3(33)	2
		LM-2(32)	2
LM	LDW280-51182	LM-1(31)	2

PART NO. LDW280-10930-15, & -29

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO	
LFM 126	LDW280-28182	LTA-8(18)	1 EA
LM	LDW280-28182	LTA-8(18)	1 EA

PART NO. LDW280-10930-17, -18 & -25

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LFM 126	LDW280-28182	LTA-8(18)	1 EA
LM	LDW280-51182	LM-2(32)	1 EA
LM	LDW280-51182	LM-1(31)	1 EA
LM	LDW280-28182	LTA-8(18)	1 EA

PART NO. LDW280-10930-11,

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO. 30	REQD PER MODULE OR END ITEM
LM	LDW280-51182	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11 (41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7 (37)	1
		LM-6(36)	1
		LM-5(35)	1
		LM-4(34)	1
		LM-3(33)	1
		LM-2(32)	1
LM	LDW280-51182	LM-1(31)	1

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.01	1.10	2.00	3.00
REV	C	B	C	C	C
SHEET					
REV					
SHEET					
REV					

LAST SECT LTR USED L-L

LAST DASH NO. USED -25

GRUMMAN REL INFO C

PRIM NO. 215

JK(C01) MP-16C-5/3/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ± 1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY	F. SHANLEY	RELIABILITY	
LAYOUT BY	F. SHANLEY		
CHECKED BY			
GRLEADER	J. PUSATERI		
VEH.DESINT	W. BISCHOFF 4/4		
STRUCTURES	FEB 4/4	PROJ ENGR	J. ALBANESE 4/8
STRUCTURES	HILDERMAN 4/4	REL GROUP	C. BOTTI 4/9
WEIGHTS	D. ROBESCH		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE-CABIN-RADAR
THERMAL

SIZE B | CODE IDENT NO. 26512 | LDW280-10930 | C

(6)

SCALE NONE | SHEET 1.00 OF 5

Ⓖ 77.1 12-65

REV"C" C.D.R. 5/8/68

THIS DWG. SUPERSEDES LDW280-10930 "NO CHANGE" MG 5-16

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	APPD
											REWORK	SCRAP			
A	1	1,1.10,2 & 3							RETRACED NO CHANGE-LAST REV. NO CHANGE-SH. 1 OF 4 WAS 1 OF 3. ADDED SH. 1.10-LOFTED DWG. WAS DIMENSIONED DWG.	LTA 8 LEM-1 LEM-2	NOT	REQD	M. GIERAK 5.16.66		
	2	2.00							ON-11, -13, -15 & -17 FINISH 76 WAS 88		✓				
B	1	1.00 1.10 2.00 3.00						EO B1	REMOVED -13, REMOVED LM-1 & LM-2 EFF FROM -15 & -17 ADDED -19 -21 & -23	LTA-8 LM-1 LM-2		-13 -15 -17	W. CONROY 4-21-67		
	2	1.00						EO B2	ADDED N/A LDW 280-51184 FOR -11 -19 -21 & -23 FOR LM-1 EFF	LM-1	NOT	REQD			
	3							EO B3	SUPERSEDED BY EO B5	NOT REQD	NOT	REQD			
	4	1.00						EO B4	REMOVED LDW 280-10930 -11 & -19 AND NEXT ASSY LDW 280-28182 FOR LM-1 & 2, ADDED LDW 280-10930 -11 TO NEXT ASSY LDW 280-51182 FOR LM-1 & -2 (1) PER MOD., ADDED LDW 280-51182 NEXT ASSY FOR -19 FOR LM-1 & -2.	LTA-8 LM-1 LM-2	NOT	REQD			
	5	1.00 1.10 2.00 3.00						EO B5	CANCELLED EO B3 REVISED TRIM OF -17 ADDED -18 -25 & -27	LTA-8 LM-1 LM-2	✓				
	6	3.00						EO B6	FOR -11 .097-.102 (#40 DRILL) 37 HOLES WAS 19 HOLES FOR -23 .097-.102 (#40 DRILL) 29 HOLES EQ SPACED WAS 15 HOLES						
	7	1.00 2.00 3.00						EO B7	REF EO B5: REMOVED -27 EFF LTA-8 (18) WAS LTA-8 (18) LM-1 (31) LM-2 (32)			-27			
	8	1.00						LEO 280-428	FOR -11 -19 -21 & -23 ADDED LM-3 THRU LM-15 EFF & SH 1.01	LM-3 THRU LM-15	NOT	REQD			
	9	1.00 2.00 3.00						EO B9	IN M/B FOR -17 -18 & -25 ADDED N/A LDW 280-51182 EFF LM-1 & 2 (1) EA REQD/MOD REMOVED -23	LM-1 LM-2		-23			
	10	1.00, 1.01		DCRF 1415					IN M/B, DELETED N/A LDW 280-51184 FROM -11, -19 & -21.	LM-1		✓	MLS 5/27/67		
C	1	1.00						EO C1	IN MODEL BLOCK, REMOVED LTA-8 REQMTS (2) FROM -19	LTA-8 (18)		-19	G. ENGEL 20 APRIL 68		
	2	1.00, 2, 3.00						EO C2	REMOVED LTA-8 FROM -11 MODEL BLOCK ADDED -27	LTA-8 (18)	NOT	REQ'D			
	3	1., 2, 3					✓	EO C3	REF EO C2 ADD -29 WAS ADD -27	LTA-8 (18)	✓				
	4	3.00					✓	EO C4	ON-11 IN FLD REVISED TRIM (2 PLACES)	LM-6 THRU LM-15	✓				
	5	1.00		LFM #126		✓		LCD 1021-33	ON -15, -17, -18, -25, -29 ADDED END ITEM LFM #126 REQ'MTS	LTA-8 (18)	NOT	REQD			

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10930	C
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10930-25		STRAP	AL ALLOY SH	QQ-A-250/5	ALCLAD 2024	.020 x 2 x 4	T42	88	
		-21		ANGLE		QQ-A-250/4	2024	.024 x 7 x 30	T3/T42	76	
		-19		TAB		QQ-A-250/5	ALCLAD 2024-T3	.032 x 2 x 2	NONE		
		-18		STRAP		QQ-A-250/4	2024	.020 x 3 x 17	T3/T42		
		-17	E	STRAP				.020 x 3 x 17			
		-15	E	ANGLE				.020 x 7 x 30			
		-29	E	ANGLE				.032 x 7 x 37			
		LDW280-10930-11	E	ANGLE	AL. ALLOY SH	QQ-A-250/4	2024	.032 x 7 x 37	T3/T42	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
			T42	AL HEAT TREAT	MIL-H-6088	88	ANODIZE	LSP-14-9030
						T3/T42	AL. HEAT TREAT	MIL-H-6088
						76	ALODINE	LSP14-2010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

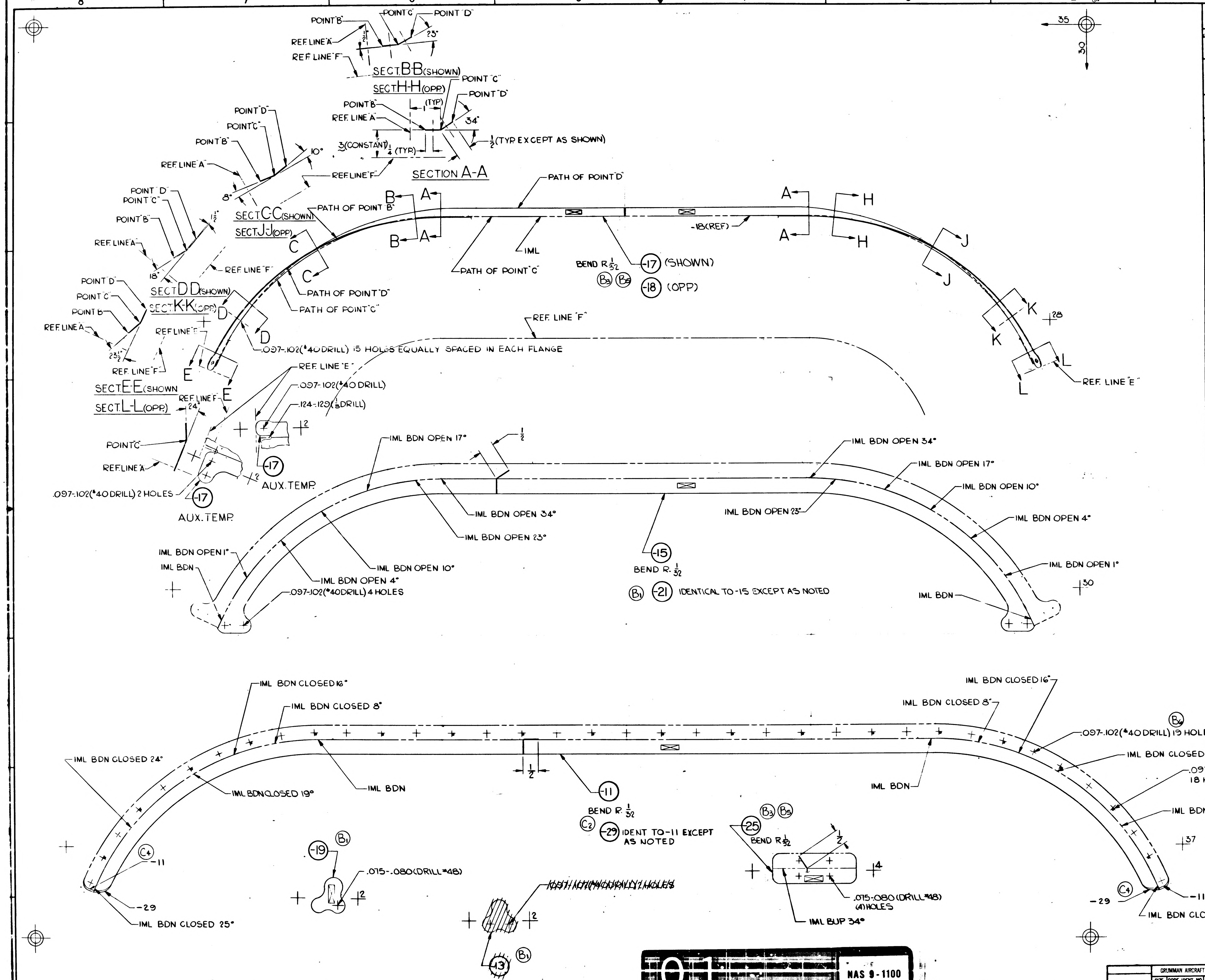
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10930	C

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01 NAS 9-1100


8
7
6
5
4
3
2
1
POINT "B"
POINT "C"
POINT "D"
REF. LINE "A"
REF. LINE "F"
25°
SECT. B-B (SHOWN)
SECT. H-H (OPP)
POINT "C"
POINT "D"
POINT "B"
REF. LINE "A"
(TYP)
34°
3 (CONSTANT)
1/4 (TYP)
1/2 (TYP EXCEPT AS SHOWN)
SECTION A-A
POINT "D"
POINT "C"
POINT "B"
10°
REF. LINE "A"
REF. LINE "F"
8°
POINT "D"
POINT "C"
POINT "B"
1/2
REF. LINE "A"
18°
REF. LINE "F"
SECT. C-C (SHOWN)
SECT. J-J (OPP)
PATH OF POINT "B"
PATH OF POINT "D"
PATH OF POINT "C"
IML
B
A
C
D
E
H
J
K
L
-18 (REF)
BEND R. 1/32
-17 (SHOWN)
-18 (OPP)
B3
B5
POINT "D"
POINT "C"
POINT "B"
REF. LINE "A"
23 1/2°
REF. LINE "F"
SECT. D-D (SHOWN)
SECT. K-K (OPP)
PATH OF POINT "D"
PATH OF POINT "C"
.097-.102 (#40 DRILL) 15 HOLES EQUALLY SPACED IN EACH FLANGE
REF. LINE "F"
REF. LINE "E"
28
SECT. E-E (SHOWN)
SECT. L-L (OPP)
REF. LINE "F"
24°
POINT "C"
REF. LINE "A"
REF. LINE "E"
.097-.102 (#40 DRILL)
.124-.129 (1/8 DRILL)
2
-17
AUX. TEMP.
.097-.102 (#40 DRILL) 2 HOLES
-17
AUX. TEMP.
IML BDN OPEN 17°
1/2
IML BDN OPEN 34°
IML BDN OPEN 17°
IML BDN OPEN 10°
IML BDN OPEN 4°
IML BDN OPEN 1°
IML BDN
IML BDN OPEN 34°
IML BDN OPEN 23°
IML BDN OPEN 23°
IML BDN OPEN 10°
IML BDN OPEN 4°
IML BDN OPEN 1°
IML BDN
.097-.102 (#40 DRILL) 4 HOLES
-15
BEND R. 1/32
B1
-21 IDENTICAL TO -15 EXCEPT AS NOTED
30
IML BDN CLOSED 16°
IML BDN CLOSED 8°
IML BDN CLOSED 24°
IML BDN CLOSED 19°
IML BDN
1/2
-11
BEND R. 1/32
C2
-29 IDENT TO -11 EXCEPT AS NOTED
IML BDN
IML BDN CLOSED 16°
IML BDN CLOSED 8°
B4
.097-.102 (#40 DRILL) 19 HOLES (ON -11 & -29)
IML BDN CLOSED 19°
.097-.102 (#40 DRILL) 18 HOLES (ON -11)
IML BDN CLOSED 24°
37
C4
-11
-29
IML BDN CLOSED 25°
-19
B1
.075-.080 (DRILL #48)
2
-25
B3
B5
BEND R 1/32
1/2
4
.075-.080 (DRILL #48) (4) HOLES
IML BUP 34°
2
-13
B1
-29
C4
-11
IML BDN CLOSED 25°
35
30

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD 10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

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NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

LEM	SIZE E	CODE IDENT NO. 26512	LDW280-10930	C
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

B K2

ENG 22.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW 280 10930
EO NO. D1
CONTROL INFO NO. LDW280B4091

FOR -17, -18, & -25
ADD LM-3(33) THRU LM-15(45) EFF
N/A LDW280-51182

LFM

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD 2360 PKG # 27

GAEC EO RELEASE (5) C JC 7/9/8

REASON FOR EO: TO BRING DETAILS UP TO DATE WITH N/A

DESCRIPTION OF EO: ON -17, -18, & -25 ADDED LM-3(33) THRU LM-15(45) EFF

MODEL	EI ~~PROCURING ACTIVITY~~ NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3(33)	
	LFM 140	LM-4(34) &	LM-5(35)
LM		LM-6(36) THRU	LM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK, SCRAP)

APPROVED BY				RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
							R.L. 7/1/68 KCC		Bauman
DATE	6/26/68	6/27/68			6/4/68	7/1/68		7/1/68	7/9/68
	VDI	THERMO							

PRIORITY: C

DRAWING TITLE: ANGLE ~ A/S ~ CABIN ~ RADAR ~ THERMAL

DRAWING NO. LDW280-10930 EO NO. D1

7/1/68
ISSUED BY HERB DONNER X7033 SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LEO280
EO NO. 1070
CONTROL INFO NO. LDW280B4094

REVISE N/A FOR THE FOLLOWING DWG & DASH NO'S
LDW280-56182 (WAS LDW280-51182) FOR LM-6(36) THRU LM-15(45)

DWG NO	DASH NO'S. *	TITLE	CHG. NO.
LDW280-11488	-11, -23, -24, -31, -41, -42 -43, -13-1, -19-1 & -37-1	FRAME ~ A/S ~ CABIN IMU BEAM THERMAL SHIELD	B2
LDW280-10929	-25, -29, -39, -41, & -51	TUBE ~ A/S ~ CABIN ~ IMU BEAM THERMAL SHIELD	E1 ✓
LDW280P10933	-11-1	RING ~ A/S ~ CABIN ~ THERMAL SHIELD	B2
LDW280-10930	-11, -17, -18, -19, -21 & -25	ANGLE ~ A/S ~ CABIN ~ RADAR ~ THERMAL	D2

SWIP

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD 3179 PKG. 3 ⑤

REASON FOR EO: SWIP II

DESCRIPTION OF EO: FOR * REVISED N/A (WAS LDW280-51182)

GAEC EO RELEASE: HF 7/25/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-6(36)	
		THRU	
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK NOT SCRAP REQD

	VDI	~~SUPPORT~~ THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY				F. Kus				
DATE	7/13/68	7/16/68		7/10/68			7/19/68	7/25/68

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO. LEO 280

EO NO. 1070

7/11/68
ISSUED BY HERB DONNER X7033 SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01 NAS 9-1100

LDW280-10931 D

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28182	LTA-8 (18)	1EA
LFM-126	LDW280-28182	LTA-8(18)	1EA

PART NO. LDW280-10931-15, -16, -17, -18 & -22

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM-126	LDW280-28182	LTA-8(18)	1 EA
LM	LDW280-51182	LM-15(45)	1 EA
LM	LDW280-51182	LM-14(44)	1 EA
LM	LDW280-51182	LM-13(43)	1 EA
LM	LDW280-51182	LM-12(42)	1 EA
LM	LDW280-51182	LM-11(41)	1 EA
LM	LDW280-51182	LM-10(40)	1 EA
LM	LDW280-51182	LM-9(39)	1 EA
LM	LDW280-51182	LM-8(38)	1 EA
LM	LDW280-51182	LM-7(37)	1 EA
LM	LDW280-51182	LM-6(36)	1 EA
LM	LDW280-51182	LM-5(35)	1 EA
LM	LDW280-51182	LM-4(34)	1 EA
LM	LDW280-51182	LM-3(33)	1 EA
LM	LDW280-51182	LM-2(32)	1 EA
LM	LDW280-51182	LM-1(31)	1 EA
LM	LDW280-28182	LTA-8(18)	1 EA

PART NO. LDW280-10931 - 11, -19, & -21

GAEC SCH NO. 30

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV	D	D	D	D						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED

LAST DASH NO. USED -22

GRUMMAN REL INFO D

PRIM NO. 215 JK(001) MP-16D-5/22/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS-9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	F. SHANLEY	RELIABILITY	
LAYOUT BY	F. SHANLEY		
CHECKED BY			
GRP LEADER	J. PUSATERI 4/4/66		
VEH DES INT	W. BISCHOFF 4/4/66		
STRUCTURES	FEB JV 4/4/66	PROJ ENGR	J. ALBER RMC 4/8/66
STRUCTURES	HILDERMAN 4/4/66	REL GROUP	A CARAMANICA 4/9/66
WEIGHTS	ROBESCH 4/8/66		

R

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE -
ASCENT STAGE - CABIN
IMU THERMAL SHIELD

SIZE B
CODE IDENT NO. 26512
LDW280-10931 D

SCALE NONE
SHEET 1.00 OF 4

1 12-65

REV 'D' CDR 5/8/68

THIS DWG SUPERSEDES LDW280-10931 "NO CHG 5-13-

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
A	1	1.00,1.10 2.00,3.00							RETRACED NO CHANGE LAST REVISION NO CHANGE. SH. 1 OF 4 WAS 1 OF 3. LOFTED DWG WAS DIMENSION.	NOT REQD	NOT	REQD	JAEGGI 5-19-66		
	2	2.00		ADV					ON -13,-15,-16,-17,-18 & -19 FINISH 76 WAS 88	NOTED	✓				
B	1	1.00,1.10, 2.00,3.00						EO B1	FOR -13 FINISH #76 (WAS) #88 & ALZAK. FOR -11 BR 1/16 (WAS) 1/32 WCG	LTA-8, LEM -1,-2	✓		JAEGG 7-18-66		
C	1	1.00 1.10						EO C1	REMOVED LM-1 & LM-2 EFF ON -13,-15,-17 & -18	LM-1, LM-2		✓	G. ZARCADOOLAS 3-27-67		
	2	1.00						EOC2	REMOVED -11,-16,-19,-21, & -22 REQMTS (IEA) AGAINST LDW280-28182 FOR LM-1 & LM-2; ADDED -11,-19,-21 & -22 REQMTS (IEA) AGAINST LDW280-51182 FOR LM-1 & LM-2; CANCELLED -16 FOR LM-1 & LM-2 ONLY	LTA-8, LM-1 & LM-2		✓			
	3	1.00						LEO280-428	FOR -11,-19,-21 & -22 ADDED LM-3 THRU LM-15 EFF	LM-3 THRU LM-15	NOT	REQD			
	4	1.00						EOC4	REMOVED LM-1 THRU LM-15 EFF FROM -22 MODEL BLOCK	LM-1 THRU LM-15		-22			
	5	3.00	2B					EOC5	ADDED EO TO RECORD BLOCK FOR LTA-8, TRIMMED -11	LTA-8, LM-1 THRU LM-15	✓				
	6	3.00	4B					LEO280-466	FOR -11 DESIGNATED F.S. AS BEING EXTERIOR SURFACE	LTA-8, LM-1 & LM-2	NOT	REQD			
	7	3.00	3H					EOC7	IN NOTE 2 REMOVED "BOTH SIDES" REVISED NOTE 3 WAS "ON -11 BOTH SURFACES SHALL BE PROTECTED AND ON -21 & -22"	LTA-8, LM-1 & LM-2	NOT	REQD			
	8								REF LEO280-466 & EOC7: EFF LTA-8, LM-1 & LM-2 SHOULD BE LTA-8, LM-1 THRU LM-15	LTA-8, LM-1 THRU LM-15	NOT	REQD			
D	1	1.00,1.10 2.00 & 3.00						EOD1	FOR -11 IN FINISH BLOCK ADDED "SEE NOTE 4". ADDED NOTE 4	LTA-8, LM-1 THRU LM-15	✓		M. MARKARIAN 4-20-67		
	2	3.00					✓	EOD2	ON -19 INFLD, REVISED TRIM (2 PLACES)	LM-6 THRU LM-15					
	3	1.00		LFM-126		✓		LCD1021-33 (CCA498)	ON -11,-15,-16,-17,-18,-19,-21 & -22, ADDED END ITEM LFM-126 REQUIREMENTS.	LTA-8	NOT	REQD			
	4	1.00,1.10,2.00					✓		REMOVED -13 (REF CHANGE A4 ON LDW280-28182) JD			-13			

CHG APPROVED LTR	GROUP LDR	VEH.DES.INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY	PROJ. ENGR	THERMO	REL GROUP
D	4/30	5/1/68	5/1/68	for FEB				5-14-68	

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10931	D
SCALE NONE			SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10931-22	E	CLIP	MAKE FROM LDW 280-10870				NONE	NONE	
		LDW280-10931-21	E	CLIP	MAKE FROM LDW 280-10870				NONE	NONE	
		LDW280-10931-19	E	ANGLE	AL ALLOY SH	QQ-A-250/5	ALCLAD 2024	.030x15/8x241/8	T42	76	
		LDW280-10931-18	E	ANGLE	AL ALLOY SH	↕	↕	.020x15/8x95/8	↕	76	
		LDW280-10931-17	E	ANGLE	AL ALLOY SH	↕	↕	.020x15/8x95/8	↕	76	
		LDW280-10931-16	E	SPLICE ANGLE	AL ALLOY SH	↕	↕	.030x21/8x53/8	↕	76	
		LDW280-10931-15	E	SPLICE ANGLE	AL ALLOY SH	QQ-A-250/5	ALCLAD 2024	.030x21/8x53/8	T42	76	
		LDW280-10931-11	E	ANGLE	AL ALLOY SH	QQ-A-250/5	SEE NOTE 2	.020x21/8x265/8	NONE	SEE NOTE 4	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						76	ALODINE	LSP-14-9010
						T42	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10931	D

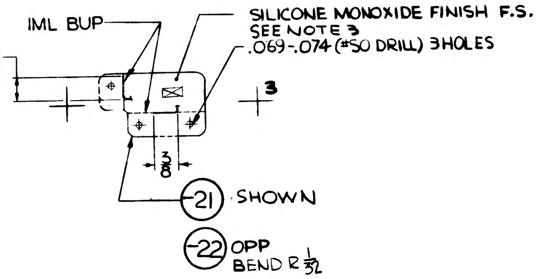
SCALE NONE SHEET 2.00

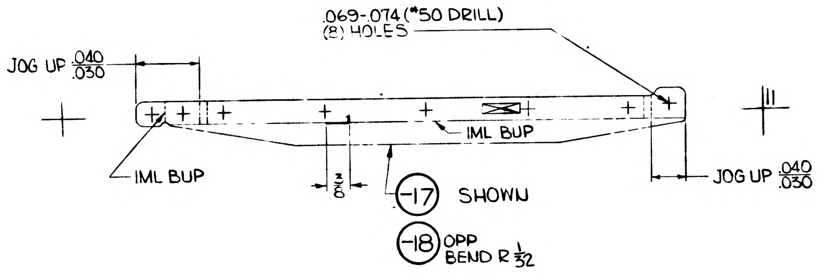
ENG 77.2 7-65

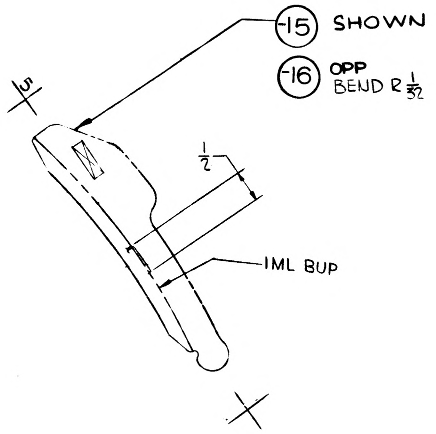
01

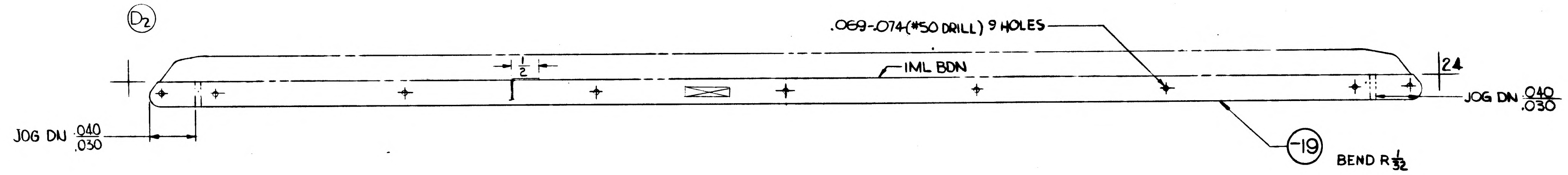
NAS 9-1100

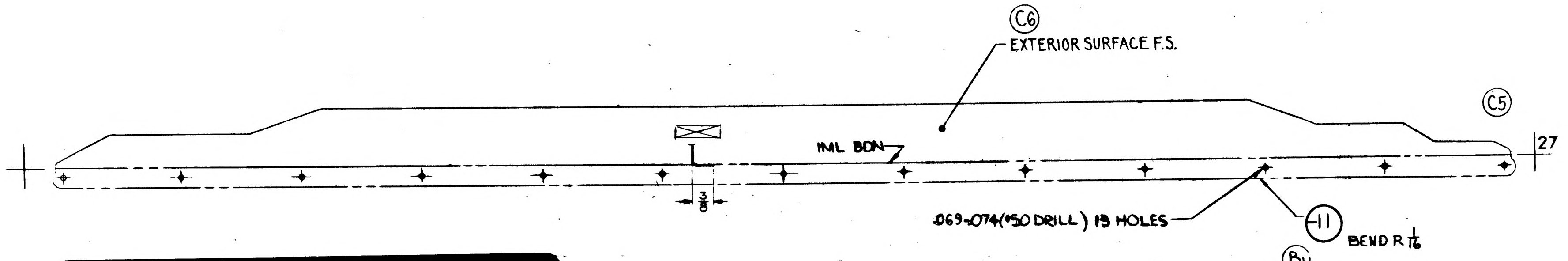
NOTES:
1. NO TOOLING HOLES PERMITTED IN -11, -21 & -22.
2. MAKE LDW280-10931-11 FROM 2024-T3 ALCLAD (SKIN QUALITY). FINISH ALUMALITE 200/R1/EB'0 WHICH MAY BE PURCHASED FROM ALUMINUM Co OF AMERICA (CODE IDENT 01634)
3. ON -11, -21 & -22 THE EXTERIOR SURFACE (F.S.) SHALL BE PROTECTED WITH STRIPPABLE VINYL COATING #796, PURCHASED FROM CARROLL PRODUCTS INC., FARMINGDALE, N.Y.
4. FINISH INTERIOR SIDE #76 PER LSP14-9010.


IML BUP
SILICONE MONOXIDE FINISH F.S.
SEE NOTE 3
.069-.074 (#50 DRILL) 3 HOLES
3
3/8
3/8
-21 SHOWN
-22 OPP
BEND R 1/32


.069-.074 (#50 DRILL)
(8) HOLES
JOG UP .040/.030
IML BUP
IML BUP
3/8
-17 SHOWN
-18 OPP
BEND R 1/32
JOG UP .040/.030


-15 SHOWN
-16 OPP
BEND R 1/32
1/2
IML BUP


D2
.069-.074 (#50 DRILL) 9 HOLES
1/2
IML BDN
24
JOG DN .040/.030
JOG DN .040/.030
-19
BEND R 1/32


C6
EXTERIOR SURFACE F.S.
IML BDN
C5
27
3/8
.069-.074 (#50 DRILL) 13 HOLES
-11
BEND R 1/16
B1

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE ~~BOTH SIDES IF NECESSARY~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN TO .0005 MAX MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

RECORD DATA

MODEL	EO NO	EFFECTIVITY
LM	C5	LTA-8(18)

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	E	26512	LDW280-10931	D
	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION 1 K2

D LDW 280-10931 D

LDW280-10931 D

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW 280-10931
EO NO. E1
CONTROL INFO NO. LDW280B4100

ADD -23 SAME AS -21 EXCEPT AS NOTED
EFF FOR -23 LM-6(36) THRU LM-15(45) N/A LDW280-56182
RESTRICT -21 TO LM-1(31) THRU LM-5(35) ē LTA-8(18) [WAS LM-1 THRU LM-15 ē LTA-8]
REVISE N/A FOR -11 ē -19 LDW280-56182 FOR LM-6(36) THRU LM-15(45)

IN L/M, MAT'L FOR -23 CLIP .012 AL ALLOY SH, 2024-T3, QQ-A-250/5
BEND RAD. $\frac{1}{16}$ FINISH: SEE NOTE △

IN F/D ADD NOTE △ TO READ AS FOLLOWS:
△ - -23 MAT'L TO BE PREFINISED AS PER LE1280-015
SURFACE DESIGNATED "EXTERIOR" TO BE PROTECTED
WITH STRIPPABLE VINYL COATING *796 PURCHASED
FROM CARROL PRODUCTS INC., FARMINGDALE, N.Y.
IN F/D ADD FOR -23 EXTERIOR SURFACE FAR SIDE

△ - USE NEXT AVAIL NOTE NUMBER

SWIP

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD 3177 PKG. 3 (5)

REASON FOR EO: SWIP II

DESCRIPTION OF EO: ADDED -23 ē NOTE △, RESTRICTED -21 (WAS LM-1 THRU LM-15 ē LTA-8), REVISED N/A FOR -11 ē -19 (WAS LDW280-51182)

GAEC EO RELEASE: VK 7/29/?

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-6(36)	
		THRU	
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK | SCRAP -21

APPROVED BY	JAP	[illegible]		[illegible]	[illegible]		JAP	[illegible]
DATE	7/13/68	7/16/68		7/10/68	[illegible]		7/19/68	7/?/68
	VDI	~~SUPPORT~~ [illegible]	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C
DRAWING TITLE: ANGLE ~ A/S ~ CABIN IMU ~ THERMAL SHIELD
DRAWING NO. LDW280-10931
EO NO. E1

7/17/68 ISSUED BY HERB DONNER X7033 SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

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ENG 32.1 REV 3-65

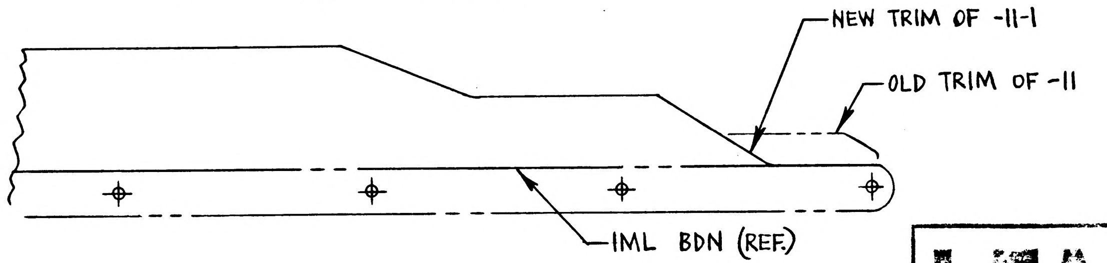
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10931		EO NO.	E2
CONTROL INFO NO.	LDW280B6338		

IN F/D & B/M ADD -11-1 ANGLE, SAME AS -11 EXCEPT AS SHOWN BELOW.

IN M/B FOR -11-1 ADD N/A LDW280-51182, (LFM140) LM-5(35), 1 REQD/MOD.; & N/A LDW280-56182, LM-6(36) THRU LM-15(45), 1 REQD/MOD.

IN M/B RESTRICT -11 TO LTA-8(18), LM-1(31) THRU LM-4(34) EFFECTIVITY.
WAS LTA-8(18), LM-1(31) THRU LM-15(45).



LFM

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 2360 PKG. 32 SH 23 (5)

REASON FOR EO: TO ELIMINATE INTERFERENCE WITH RENDEZVOUS RADAR

DESCRIPTION OF EO: RESTRICTED EFFECTIVITY OF -11 TO LTA-8, LM-1 THRU LM-4 BY REMOVING LM-5 THRU LM-15. IN F/D, B/M & M/B ADDED -11-1.

GAEC EO RELEASE: 12/12 ; 12/14

MODEL	EFFECTIVITY: EI ~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 140	LM-5(35)	
LM		LM-6(36) THRU LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY								
DATE	12/6/68	12/10/68		12/5/68	12/10/68		12/12/68	12-13-68
	VDI	~~SUPPORT~~ THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	ANGLE - ASCENT STAGE - CABIN IMU THERMAL SHIELD	LDW280-10931	E2

12-18-68
ISSUED BY F. SHANLEY 7033 SECTION VEH. DESIGN INT. GROUP NO. 335 PL 25

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG NO. LDW280-10931

EO NO. E3

CONTROL INFO NO. LM-5-24000

ADD NOTE *
FOR FUTURE REPLACEMENT & SPARES -11-1
MAYBE PREFINISHED PER LEI 280-015
IN LEIU OF ALUMALITE PER NOTE 4.

IN B/M FOR -11-1 SEE NOTE 4 S/B SEE NOTE *.

* USE NEXT AVAILABLE NO.

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☒	CL I ENGRG CHG	☐

REASON FOR EO: TO PERMIT ALTERNATE FINISH. RTE 05-131-985

DESCRIPTION OF EO: FOR -11-1 ADDED NOTE *.

GAEC EO RELEASE: Ⓓ

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOT REQD	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓		NOT REQD.	
REVISE DWG	RECORD EO	REWORK	SCRAP

APPROVED BY	MR			VC	ALW	PGT	Botts
DATE	8/12/71	8/12/71		8/20/71	8/12/71	8/12/71	8-20-71	8-12-71
8-11-71	MAT'L	~~THERM~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
E	ANGLE A.S.-CABIN-IMU THERMAL SHLD	LDW280-10931	E3

ISSUED BY J. JARVIS x86755 SECTION VDI GROUP NO. 0335 PL 025

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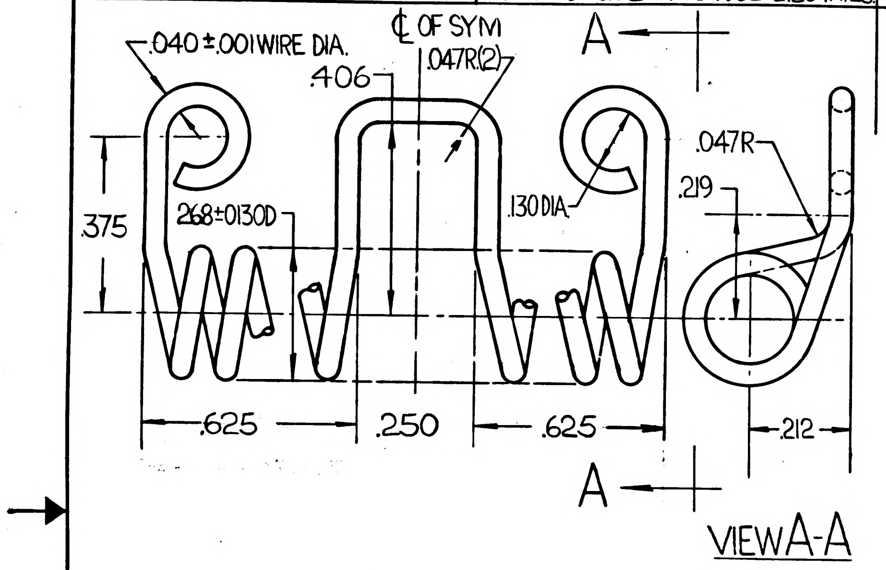
NAS 9-1100

ENGINEERING INFORMATION ONLY

TORSION RATE: .013 IN. LB/DEGREE | MAX. ROTATION 175°

DESIGN SPRING LIFE | MAX. TORQUE IN RANGE 220 IN.LB.

CHG LTR	ITEM NO.	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION OF REVISIONS	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	APPD	
							REWORK	SCRAP		ENGRG	GOVT



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW 280-23069	LEM-6(36)	1
LEM	LDW 280-23069	LEM-5(35)	1
LEM	LDW 280-23069	LEM-4(34)	1
LEM	LDW 280-23069	LEM-3(33)	1
LEM	LDW 280-28069	LEM-2(32)	1
LEM	LDW 280-28069	LEM-1(31)	1
LEM	LDW 280-28069	LTA-8(18)	1
LEM	LDW 280-23069	LTA-3(13)	1

PART NO. LDW 280-10934-1

GAEC SCH NO. 31-2

NO. OF ACTIVE COILS: 14.63 PER SIDE

NO. OF TOTAL COILS: 29.25

ENDS TO BE CLOSED AND GROUND SQUARE

DIRECTION OF COILING OPTIONAL

TOLERANCE ON PROPORTIONATE LOAD ± 10% UP TO FROM SOLID HEIGHT

SPRING TO OPERATE INSIDE OF .438 DIA; & OUTSIDE OF .138 DIA

STRAIN RELIEVE AFTER FORMING. MAGNAFLUX IF WIRE DIA IS GREATER THAN .063

INSPECTION TEST TORQUE AT 100° ROTATION OF CENTER LOOP TO BE 1.30 IN LBS ± 10%

FINISH: TIN PLATE PER LSP14-8300 DON'T EXCEED 375° DURING BAKING PROCESS

PART NO.	I&T:	MATERIAL	GOVT SPEC	COMMERCIAL SPEC
LDW280-10934-1	E	SRING STEEL WIRE	QQ-W-470	HI CARBON

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED
FRACTIONS — DECIMALS — ANGLES
±1/64 ±.010 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

GRUMMAN REL INFO	PRIM NO.			
	215	MP12		

3

CONTRACT NO. NAS 9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY	F. HIPPLER 3-19-66		
LAYOUT BY	GLYN OLIVER		
CHECKED BY	F. 3-21-66		
GR LEADER	J. Pusateri 3/23		
VEH DES INT	3/23	PROJ ENGR	3-31-66
STRUCTURE	FB 3/25		
STRUCTURE	Ulderman 3/25	~~PROJ ENGR~~	
WEIGHTS	A Bobesch 3-30	RELEASE	A. Cusumano 4-4

B

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SPRING
ASCENT STAGE-MID SECT, DOWNSTOP
UPPER DOCKING HATCH, DOUBLE TORSION

SIZE	CODE IDENT NO.	
B	26512	LDW280-10934
SCALE	NONE	SHEET 1

ENG 77.12 9-64

01

NAS 9-1100

23 *

ENG 22.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280
EO NO 295
CONTROL INFO NO. 1DWE8CA0657

* TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34).

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10789	A3	SEE DRAWING
-10790	B1	
H 10792	C1	
-10796	A1	
-10798	B1	
-10800	B2	
H 10801	A1	
H 10802	B1	
H 10804	B1	
-10806	C1	
-10808	A1	
P 10809	B2	
-10811	B2	
-10813	B1	
-10814	B1	
-10815	A4	
-10817	A1	
-10838	B1	
-10846	C1	
-10927	B1	
-10934	A1	
-10953	B1	
-10954	A1	
-10955	A1	
-10961	A3	
P 10966	A4	
-10970	A1	
-10973	A1	
-10974	A1	
-10976	A1	
-10977	A1	
-10979	A1	
LDW280-10980	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL III ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.*

GAEC EO RELEASE C: LE 108

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM-9(39)
LEM		LEM-10(40) LEM-11	(41) LEM-12 (42)
LEM		LEM-13(43) LEM-14	(44) LEM-15 (45)

DRAWING CHANGE REQ'D: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK NOT REQ'D SCRAP
APPROVED BY: VP
DATE: 9/23/66
V.D.I. SUPPORT RELIAB. GROUP GROUP LEADER STRESS GROUP
AW 9.21
PROJ ENGRG: RMC (UP) 10-6-66
GOVT: AC 10-3-66

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO: LEO280
EO NO. 295

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO 280 PL 35

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NAS 9-1100

C

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10934	EO NO. A2
CONTROL INFO NO. LM-3-5148	

IN MOD. BLOCK
FOR - 1

ADD - LTA-8 (18) & DVT (70) EFF.
N/A - LDW280-28917
1 REQD. / MOD.

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☑ LCD 1224 CCA 548 3

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
TO UPDATE DWG. REQMTS FOR LTA-8 & DVT.	FOR-1, ADDED LTA-8 & DVT REQMTS.	C JK

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UN'T NO.
LM		LTA-8 (18)	
		DVT (70)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY							
✓		NOT REQD.		DATE	6/5/67				6-2-67	6-2-67	6/19
REVISE DWG	RECORD EO	REWORK	SCRAP	2	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C3	SPRING A/S M/S DOWNSTOP-UPPER DOCKING TUN., DBL TORSION	LDW280-10934	A2

ISSUED BY LIAISON / ALEC HARVEY (X2151) 6-2-67 SECTION V. D. I. GROUP NO. 335 PL 25

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NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

40 32.3 REV 3-66

DWG. NO. LEO 280
EO NO. 674
CONTROL INFO NO. LDW280A7678

FOR THE FOLLOWING DRAWINGS WITH DASH NUMBERS NOTED - ADD ZERO "G" TEST FIXTURE EFFECTIVITY.

DRAWING NO.	DASH NO.	NEXT ASSEMBLY	CHG. NO.	NO. REQ'D	TITLE
LDW280-23068	-7	LDW280-53002	B6	1	HATCH INST'L-UPPER
✓ LDW280-23069	-3	LDW280-23068	B5	1	HATCH ASSY.
✓ LDW280-10318	-11 & -13	LDW280-23069	B3	1 EACH	PLATE
✓ LDW280-10318	-15			1	CHANNEL
✓ LDW280-10319	-11 & -13		B5	1 EACH	CHANNEL
LDW280-10319	-15			1	ANGLE
LDW280-10319	-17 & -19			1 EACH	CLIP
✓ LDW280-10702	-17		A3	2	BLOCK
✓ LDW280-10727	-11 & -13		A3	1 EACH	BRACKET
✓ LDW280-10745	-11		A3	8	BLOCK
LDW280-10745	-13			2	BLOCK
✓ LDW280-10934	-1		A3	1	SPRING
LDW280-23168	-1		A4	3	HAT ASSY
LDW280-23168	-3, -5 & -7			1 EACH	HAT ASSY
LDW280M10515	-1		D5	1	HATCH
LDW280M10827	-1		B3	1	FITTING
LDW280M10828	-1	LDW280-23069	B3	1	LEVER
LDW280-11028	-17	LDW280-23069	C3	2	BRACKET
LDW280M10726	-1	LDW280-23255	B4	1	CRANK
LDW280M10543	-1	LDW280-23068	A3	1	SHEAR PIN
LDW280M10516	-1	LDW280-23068	A4	2	BUSHING
LDW330-54011	-1	LDW280-54093	A7	1	DUMP VALVE INST'L
LDW330-54011	-3	LDW280-23068		1	DUMP VALVE INSTL
LDW280-23254	-3	LDW280-23068	B6	1	LATCH ASSY
LDW280-10635	-1	LDW280-23254	B4	1	SPRING
LDW280M10727	-3	LDW280-23254	C3	1	SHAFT
LDW280M10728	-1		B4	1	IDLER
LDW280M10730	-1		A5	1	HOUSING
LDW280M10731	-1	LDW280-23254	B4	1	DETENT CAP
LDW280-54093	-5	LDW280-54002	C8	1	HATCH INSTL.-FWD.
LDW280-54083	-3	LDW280-54093	B5	1	HATCH ASSY.
LDW280M10276	-3 & -4	LDW280-54083	C2	3 EACH	DOUBLER
LDW280M10405	-3	LDW280-54083	D4	1	HATCH
LDW280M10474	-5	LDW280-54093	C4	1	HINGE ASSY.
LDW280M10492	-1	LDW280-54083	C2	1	HINGE-UPPER
LDW280M10493	-1	LDW280-54083	C2	1	HINGE-LOWER
LDW280M10643	-3	LDW280-23170	C3	1	SHAFT
LDW280M10639	-1	LDW280-23190	A3	1	CRANK
LDW280-23170	-1	LDW280-54093	B6	1	LATCH ASSY.
LDW280-10526	-11, -12, -13, -15, -17	LDW280-54083	C2	1 EACH	ANGLE
LDW280-10600	-1	LDW280-23170	B3	1	SPRING
LDW280M10641	-1	LDW280-23170	B3	1	IDLER ASSY.-LATCH
LDW280M10642	-1	LDW280-23170	B3	1	CAP-LATCH

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO | DESCRIPTION OF EO | GAEC EO RELEASE

MODEL | EFFECTIVITY: PROCURING ACTIVITY NO. | GAEC UNIT NO. | SUB CONTR UNIT NO. | DRAWING CHANGE REQD: REVISE DWG, RECORD EO | DISPOSITION OF PARTS: REWORK, SCRAP | APPROVED BY | DATE | SUPPORT | RELIAB. GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG | GOVT

PRIORITY | DRAWING TITLE | DRAWING NO. | EO NO. 674

ISSUED BY _____ SECTION _____ GROUP NO. _____ PL. _____

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512 *
ENGINEERING ORDER

40 32.3 REV 3-66

DWG. NO. LEO280
EO NO. 674
CONTROL INFO NO. LDW280A7678

DRAWING NO.	DASH NO.*	NEXT ASSEMBLY	CHG. NO.	REQ'D	TITLE
LDW280-11787	-11 & -12	LDW280-23069	A2	1 EACH	ZEE, HATCH DWNSTR. SUPT.
LDW280-11787	-13 & -15			1 EACH	ANGLE, "
LDW280-11787	-17 & -19			1 EACH	CLIP, "
LDW280-11788	-11 & -13		A3	1 EACH	TEE, "
LDW280-11788	-15, -17 & -19			1 EACH	ANGLE, "
LDW280-11788	-21	LDW280-23069		2	DOUBLER, "
LDW280M11324	-11	LDW280-23068	A1	1	HANDLE
LDW280M11324	-11	LDW280-54093		1	HANDLE

5

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG ✓ CCA547; LCD1367; REF. TWX CF23/T7-15-67-T569

REASON FOR EO: TO ADD ZERO "G" EFFECTIVITY

DESCRIPTION OF EO: FOR DASH * ADDED ZERO "G" EFF.

GAEC EO RELEASE: Ⓡ C JK 8/7/7

MODEL: LM
EFFECTIVITY: ZERO "G" TEST
DRAWING CHANGE REQD: REVISE DWG ✓
DISPOSITION OF PARTS: NOT REQ'D
APPROVED BY / DATE: 8/3/67 VDI; GROUP LEADER 8-2-67; STRESS GROUP —; PROJ ENGRG 8/4/67; GOVT 8-7-67

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LEO 280
EO NO.: 674

ISSUED BY E.Bude/E. Ransom X7033 SECTION VEH. DES. INT GROUP NO. 335 PL. 25

01 NAS 9-1100

C

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10934
EO NO. A4
CONTROL INFO NO. LDW280A8875

"THIS E.O. CANCELS E.O. A2"

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	L	LCD1224 CCA548, AMENDMENT 4 5

REASON FOR EO: TO CANCEL LTA-8(18) & DVT(70) EFF. FOR N/A~LDW280-28917

DESCRIPTION OF EO: "THIS E.O. CANCELS E.O. A2"

GAEC EO RELEASE: C JK 8/26

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LTA-8(18)	
LM		DVT(70)	

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
✓			✓

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONT~~
APPROVED BY				FDR				
DATE	8/21/67			8/21/67	8-23		8/24	8-26-67

PRIORITY: C

DRAWING TITLE: SPRING~A/S, M/S DWNSTOP UPPER DOCKING TUN, DBL TORSION

DRAWING NO. LDW280-10934

EO NO. A4

ISSUED BY 8/24 GMGREEN X7036 8-21-67

SECTION VEH. DES. INT.

GROUP NO. 335

PL 25

01

NAS 9-1100

LDW280-10935 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53019	LM-3(33)	1
LM	LDW280-28019	LM-2(32)	1
LM	LDW280-28019	LM-1(31)	1
LM	LDW280-28019	LTA-8 (18)	1

PART NO. LDW280-10935-11
GAEC SCH NO. 32.4

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED
LAST DASH NO. USED -11

GRUMMAN REL INFO
PRIM NO. 215
VE(001) MP-14 A-12-20-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	S. JOHNSON 12/14/66
LAYOUT BY	J. LEONARD
CHECKED BY	EG 12-19-66
GR LEADER	W Kelly 12/17/66
VEH DES INT	
STRUCTURES	JV 12/21
STRUCTURES	CB 12/20
WEIGHTS	

RELIABILITY
PROJ ENGR RM Carbee 12-20
REL GROUP 12/21/66

(U)
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DOUBLER-
ASCENT STAGE-MID SECT
-Z 27 BLKHD REINF.

SIZE B
CODE IDENT NO. 26512
LDW280-10935 A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	APPD
											REWORK	SCRAP			
A	1	1,10						EO A1	EO A1 INITIAL DWG RELEASE-PARTS MADE PER EO	LTA-8, LM-1 THRU LM-3	NOT	REQD	JOHNSON 12/14/66		

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY
A	—	12/5/6				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10935	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	LDW280-10935-11	E		DOUBLER	AL ALLOY SH	QQ-A-250/5	2024-T3 ALCLAD	.050 × 6 × 20	NONE	88	

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

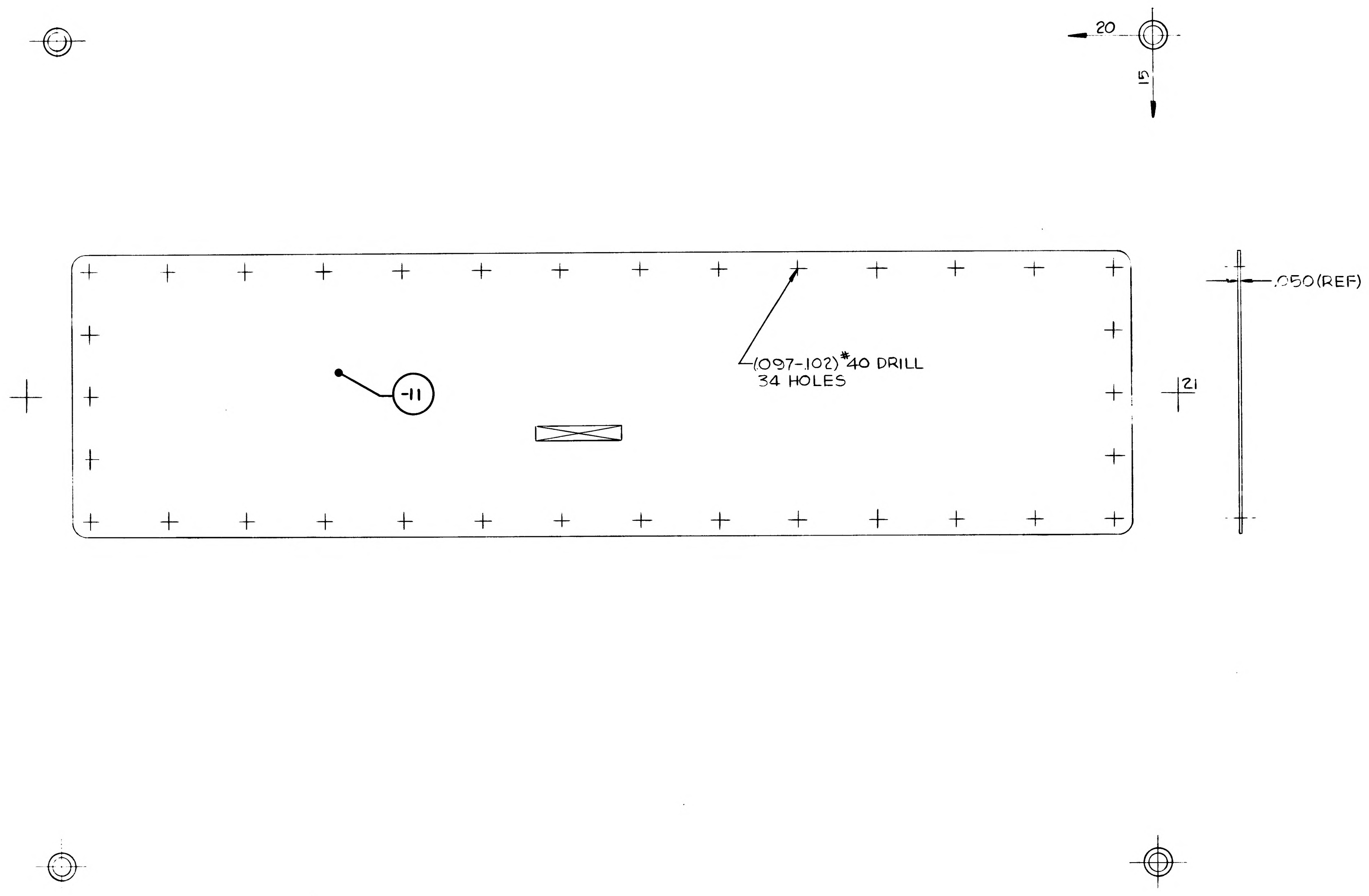
SIZE	CODE IDENT NO.		
B	26512	LDW280-10935	A
SCALE NONE			SHEET 2.00

ENG 77.2 5-64

01

NAS 9-1100

LDW280-10935 A



MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS $\pm\frac{1}{32}$	✓

LDW280-10935A

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LM	SIZE D	CODE IDENT NO. 26512	LDW280-10935	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K3

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28074	LEM-2(32)	2
LEM	LDW280-28074	LEM-1(31)	2
LEM	LDW280-28074	LTA-8 (18)	2
PART NO. LDW280-10936-17		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28074	LEM-2(32)	1 EA
LEM	LDW280-28074	LEM-1(31)	1 EA
LEM	LDW280-28074	LTA-8 (18)	1 EA
PART NO. LDW280-10936-11,-12,-13 & -15		GAEC SCH NO. 3/-3	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO		
LAST DASH NO. USED	-17	PRIM NO. 215	LE(001) MP12	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM # 1 | DOCUMENTATION TYPE II

DRAWN BY	H. DEUTSCH 3-7-66	RELIABILITY	
LAYOUT BY	J. CALANDRA 3-19-66		
CHECKED BY	WCG 3/18/66		
GR. LEADER	J. Pusateri 3/19		
VEH DES INT	3/19		
STRUCTURE	3-19	PROJ ENGR	3-30-66
STRUCTURE	3-24	REL GROUP	Botti 3-31-66
WEIGHTS	3-24		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE - CABIN
+Z 42.437

SIZE	CODE IDENT NO.	
B	26512	LDW280-10936
SCALE	NONE	SHEET 1.00 OF 3

ENG 77.1 9-64

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10936-17	E	PLATE	AL ALLOY SH	QQ-A-283	7075-T6	.050X1 3/8X6	NONE	88	
		LDW280-10936-15		ANGLE	AL ALLOY SH	QQ-A-283	7075	.050X2 3/4X16 1/8	T6	88	
		LDW280-10936-13		ANGLE	AL ALLOY SH	QQ-A-283	7075	.036X2 3/4X16 1/8	T6	88	
		LDW280-10936-12		ANGLE	AL ALLOY SH	QQ-A-283	7075	.036X2 5/8X18	T6	88	
		LDW280-10936-11	E	ANGLE	AL ALLOY SH	QQ-A-283	7075	.036X2 5/8X18	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	AL HEAT TREAT	MIL-H-6088
88	ANODIZE	LSP 14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

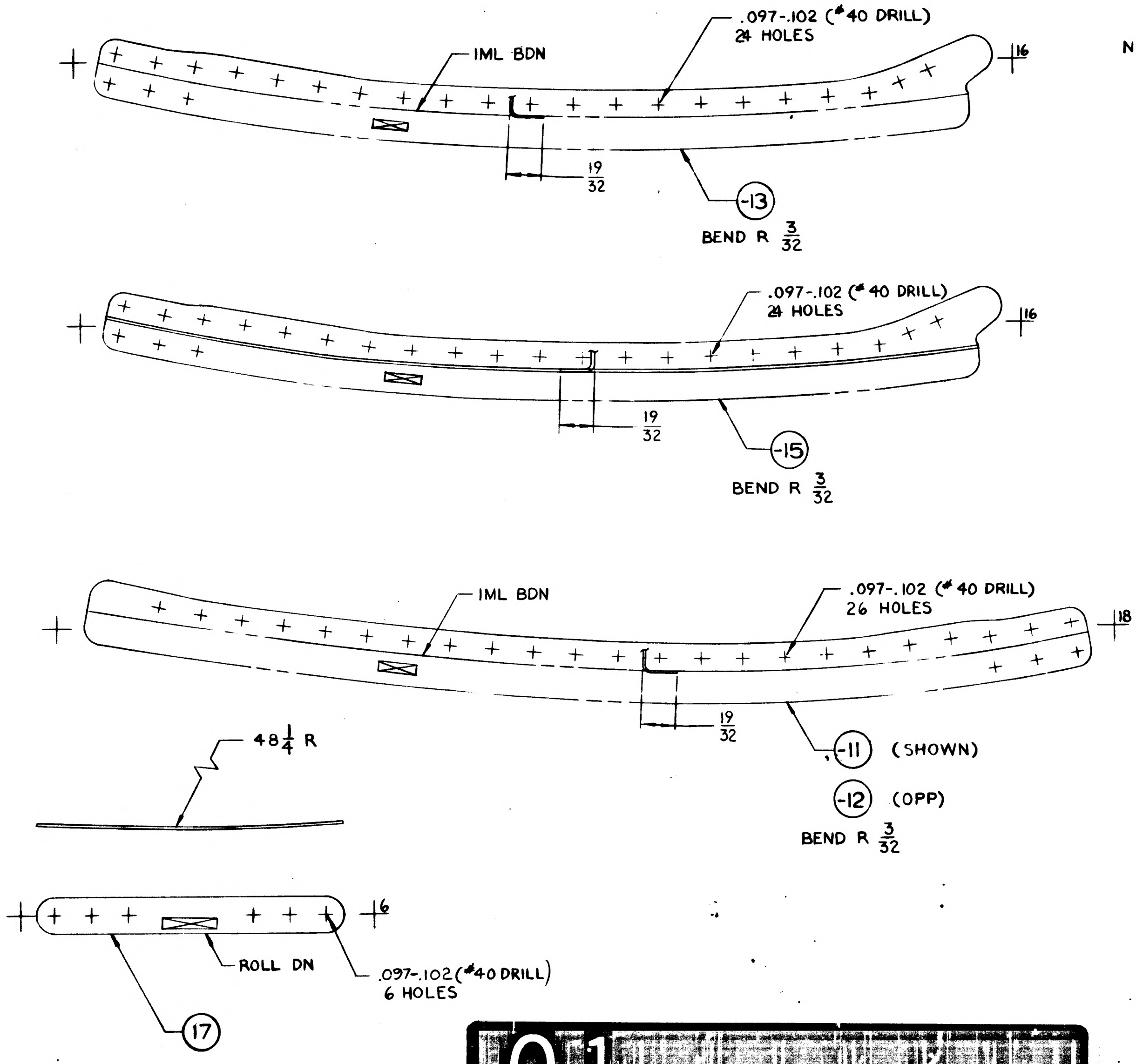
SIZE	CODE IDENT NO.	
B	26512	LDW280-10936

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


.097-.102 (#40 DRILL)
24 HOLES
IML BDN
16
19/32
-13
BEND R 3/32
.097-.102 (#40 DRILL)
24 HOLES
16
19/32
-15
BEND R 3/32
IML BDN
.097-.102 (#40 DRILL)
26 HOLES
18
19/32
-11 (SHOWN)
-12 (OPP)
BEND R 3/32
48 1/4 R
6
ROLL DN
.097-.102 (#40 DRILL)
6 HOLES
17

NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ƒ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

LEM	SIZE D	CODE IDENT NO. 26512	LDW280-10936	
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

LDW280-10937 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53074	LEM-3 (33)	1 EA
PART NO. LDW280-10937-11, -15 & -17		GAEC SCH NO. 313	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A		
		PRIM NO.	4001	
LAST DASH NO. USED	-17	215	MP12	FX 6/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY H. KLONSKY 5-4-66
LAYOUT BY P. CICCOTTO
CHECKED BY EG 5-9-66
GR LEADER J. Puaten 6/6/66
VEH DES INT 6/6/66
STRUCTURES BW 6/1
STRUCTURES 6/7
WEIGHTS 6/
PROJ ENGR Plunkett 15 Jun
REL GROUP Batts 6-20-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

FORMER
ASCENT STAGE - CABIN SECTION +Z58.000

SIZE B
CODE IDENT NO. 26512
LDW280-10937 A
SCALE NONE
SHEET 1.00 OF 3

ENG 77.1 12-65

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1,2,3 & 1.10	5B					EO-A1	INFIELD & B/M, ADDED -17, REMOVED -13	LEM-3(33)		✓	RS V.SIBILLA 8-17-66	X	X

CHG APPROVED

LTR	GROUP LDR	VEH.DES.INT.	STRUCTURES	STRUCTURES	WEIGHTS						
A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10937	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10937-15	E	STRAP	AL ALLOY SH	QQ-A-250/12	7075-0	.090 x 1 3/8 x 6 1/4	T6	88	
		LDW280-10937-17	E	FORMER	AL ALLOY SH	QQ-A-250/12	7075-0	.071 x 5 3/8 x 27	T6	88	
		LDW280-10937-11	E	FORMER	AL ALLOY SH	QQ-A-250/12	7075-0	.071 x 5 x 25	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B | CODE IDENT NO. 26512 | LDW280-10937 | A

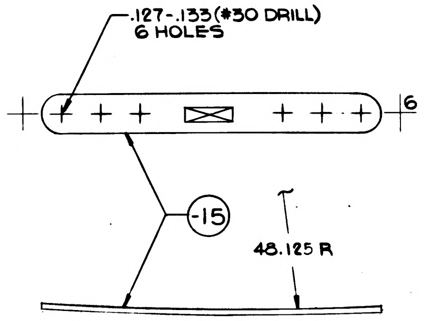
SCALE NONE | SHEET 2.00

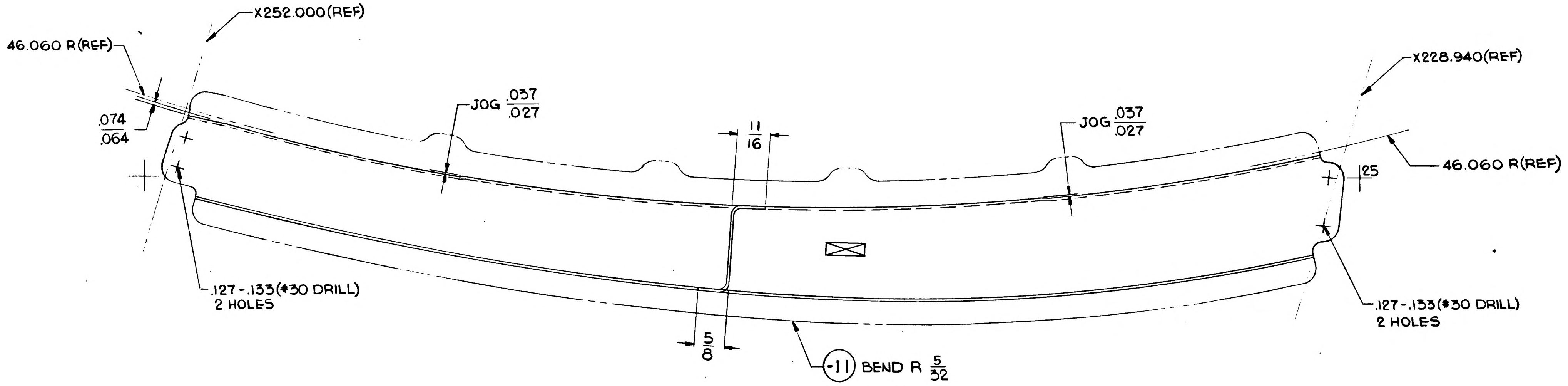
ENG 77.2 7-65

01

NAS 9-1100

NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS.


.127-.133(#30 DRILL)
6 HOLES
.6
-15
48.125 R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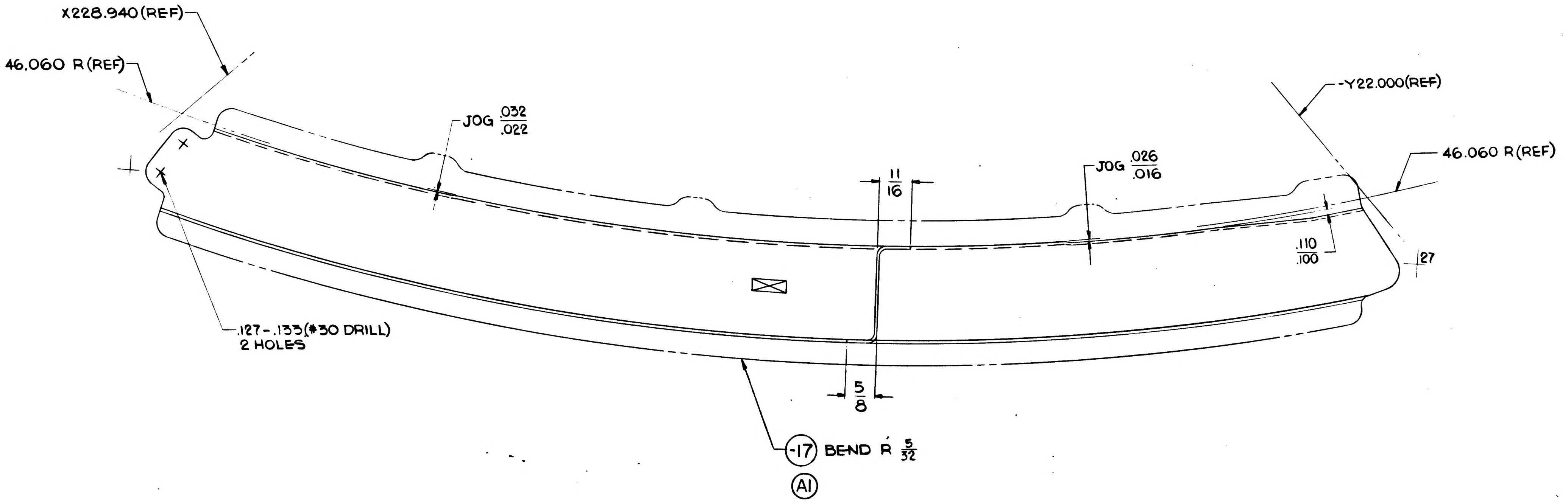
46.060 R(REF)
.074
.064
JOG .037
.027
11
16
JOG .037
.027
X228.940(REF)
.25
46.060 R(REF)
.127-.133(#30 DRILL)
2 HOLES
5
8
-11 BEND R 5/32
.127-.133(#30 DRILL)
2 HOLES


X228.940(REF)
46.060 R(REF)
JOG .032
.022
11
16
JOG .026
.016
-Y22.000(REF)
46.060 R(REF)
.110
.100
.27
.127-.133(#30 DRILL)
2 HOLES
5
8
-17 BEND R 5/32
A1

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN. NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK
LEM
MODEL OR END ITEM
SIZE E
CODE IDENT NO. 26512
LDW280-10937 A
SCALE FULL
SHEET 3.00
FOR PHOTO REPRODUCTION
K2

LDW280-10938

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

LEM	LDW280-53074	LEM-3(33)	1 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10938-11, -13 & -15		GAEC SCH NO. 31-3	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL^C INFO			
LAST DASH NO. USED	-15	PRIM NO. 215	E(001) MP17✓		JR 5/20

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM #1 | DOCUMENTATION TYPE II

DRAWN BY	E.SICK 4-28-66	RELIABILITY	—
LAYOUT BY	P.ABRAMS 5-3-66		
CHECKED BY	EG 5-3-66		
GR LEADER	J. Pusateri 5/4/66		
VEH DES INT	[illegible] 5/4		
STRUCTURE	FEG [illegible] 5/19	PROJ ENGR	Plunkett 1 June 66
STRUCTURE	Hilderman 5/20	REL GROUP	Botti 6-3-66
WEIGHTS	W. G. Mandras 5/31		

Ⓡ GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

STRAP
ASCENT STAGE MISSION PROGRAMER
Z 33.188 L.H.

SIZE	CODE IDENT NO.	
B	26512	LDW280-10938

SCALE NONE | SHEET 1.00 OF 3

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10938-15	E	STRAP	AL ALLOY SH	QQ-A-283	7075-T6	.063×1 3/16×6 1/4	NONE	76	
		LDW280-10938-13	E	STRAP	AL ALLOY SH	QQ-A-283	7075-T6	.080×1 1/2×6	NONE	76	
		LDW280-10938-11	E	STRAP	AL ALLOY SH	QQ-A-283	7075-T6	.063×1 3/8×4 7/8	NONE	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

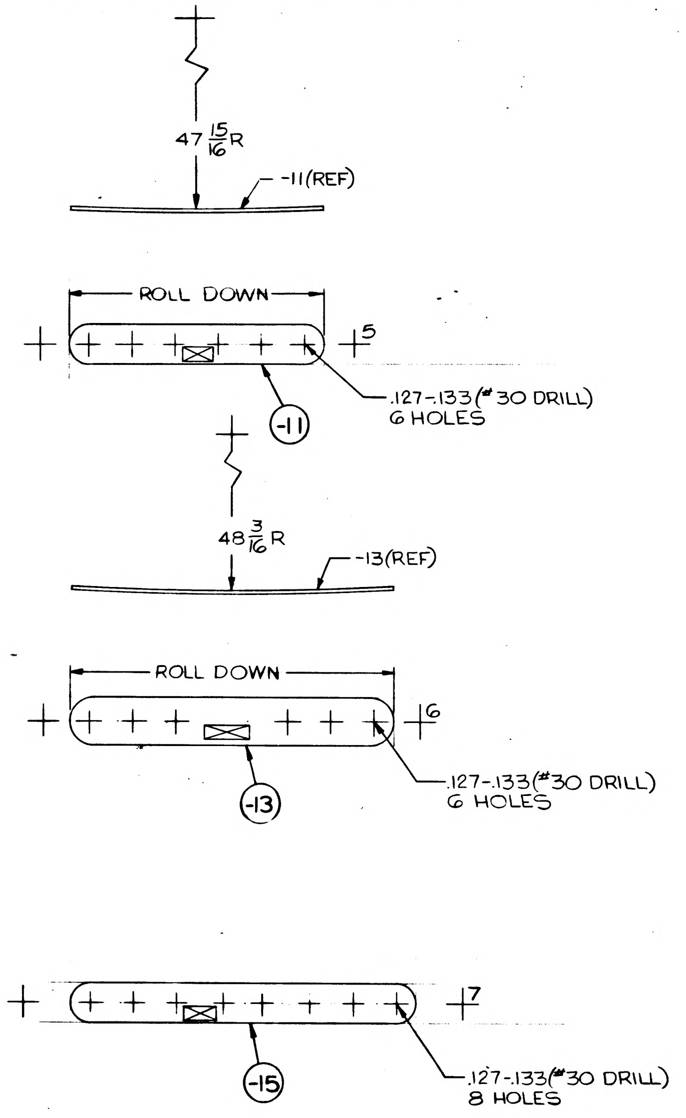
SIZE	CODE IDENT NO.	
B	26512	LDW280-10938

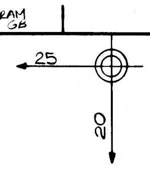
SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100





NOTE

1. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

TEAM GB

LDW280-10938

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM LEM	SIZE D	CODE IDENT NO. 26512	LDW280-10938	
	SCALE FULL			SHEET 3.00

FOR PHOTO REPRODUCTION

K2

NAS 9-1100

01

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10940-19	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.071×3 1/4×27 3/4	T6	88	
		LDW280-10940-17	E	FRAME	AL ALLOY SH	QQ-A-250/12	7075	.071 ×4 1/4×28 5/8	T6	88	
		-15						.071×5 1/2×26			
		-13						.071×5 1/4×26 1/2			
		LDW280-10940-11	E	FRAME	AL ALLOY SH	QQ-A-250/12	7075	.071 ×4 5/8×24 3/4	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP-14-9030
T6	AL HEAT TREAT	MIL-H-6083

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10940	A

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

LDW280-10940 C

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53074	LEM-3(33)	1EA
PART NO. LDW280-10940-11,-13,-15 -17 & -19		GAEC SCH NO. 313	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV	C	C	A	C						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED

LAST DASH NO. USED -19

GRUMMAN REL INFO C

PRIM NO. 215

L5(001)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM #1

DOCUMENTATION TYPE II

DRAWN BY	ESICK 5-6-66	RELIABILITY	
LAYOUT BY	P. ABRAMS 6-6-66		
CHECKED BY	D. FASS 5-12-66		
GR LEADER	J. Cusateri 6/6		
VEHDESINT	[illegible] 6/6		
STRUCTURE	[illegible] 6/8	PROJ ENGR	Plumbett 15 Jun 66
STRUCTURE	Hilderman 6/8	REL GROUP	Botti 6-20-66
WEIGHTS	[illegible] 6/15		

®GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

FRAME
ASCENT STAGE-MISSION PROGRAMER
Z33.183

SIZE B

CODE IDENT NO. 26512

LDW280-10940 C

SCALE NONE

SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00,1.10,2.00 & 3.00							REVISED TRIM OF -17; ADDED -19 & SH 1.10 SH 1.00 OF 4 WAS: 1.00 OF 3	LEM 3	-17		H CALDARERA 7-30-66	8-1-66	
B	1	1.00,1.10,3.00						E.O. B1	-11 ADDED JOG. $\frac{.060}{.050}$.	LEM-3	✓		BRODA 9-14-66		
C		1,1.10,3						LCD 1244	REVISED TRIM OF -11	LM-3	✓		LUNDSTEN 6-16-67		

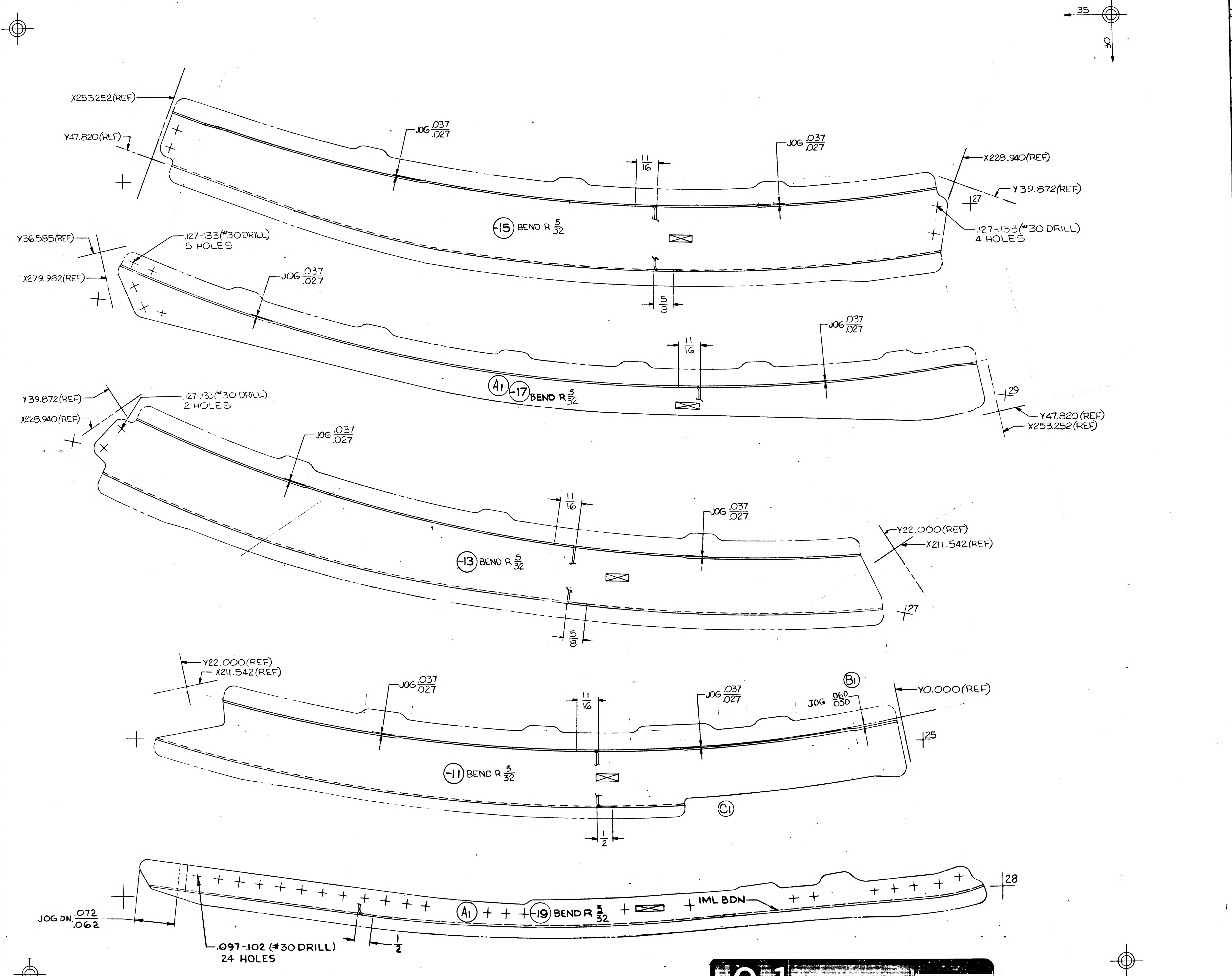
FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10940	C
SCALE NONE			SHEET 1.10

G 77.3 5-65

01 NAS 9-1100



35
30
X253.252(REF)
Y47.820(REF)
JOG .037/.027
11/16
JOG .037/.027
X228.940(REF)
Y39.872(REF)
27
-15 BEND R 5/32
.127-.133(#30 DRILL)
4 HOLES
Y36.585(REF)
.127-.133(#30 DRILL)
5 HOLES
X279.982(REF)
JOG .037/.027
5/8
JOG .037/.027
11/16
A1
-17 BEND R 5/32
29
Y47.820(REF)
X253.252(REF)
Y39.872(REF)
.127-.133(#30 DRILL)
2 HOLES
X228.940(REF)
JOG .037/.027
11/16
JOG .037/.027
Y22.000(REF)
X211.542(REF)
-13 BEND R 5/32
5/8
27
Y22.000(REF)
X211.542(REF)
JOG .037/.027
11/16
JOG .037/.027
B1
JOG .060/.050
Y0.000(REF)
25
-11 BEND R 5/32
C1
1/2
28
JOG DN. .072/.062
A1
-19 BEND R 5/32
IML BDN
.097-.102 (#30 DRILL)
24 HOLES
1/2

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

LEM	SIZE E	CODE IDENT NO. 26512	LDW280-10940	C
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

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REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE ~ LAST REVISION NO CHANGE SH 1 OF 5 WAS SH 1 OF 4 ~ ADDED SH 1.10 LOFTED DWG WAS DIMENSIONED.				D. KLINGENER 5-26-66		
A	1	1, 1.10, 2 & 3							REMOVED -17, -19 & -20 ADDED -23, -25, -27, -29, -31, -33 -34, -35 & 36. ADDED NOTE *5. REMOVED -17, -19 & -20 FROM NOTES 2 & 3 & DELETED NOTE 4. REMOVED LTA-8 EFF FROM -11, -13 & -15	LTA-8, LEM 1 & 2		✓			
B	1	2.00, 3.00						EO B1	IN B/M FOR -23, -25 & -27: REMOVED 'NONE' FROM FINISH COLUMN, ADDED 'NOTE 5'. IN F/D, NOTE 5: REMOVED "....PER LDW280-11310", REPLACED WITH "....PER LDW280-11367"; ADDED -23, -25 & -27.	LTA-8	✓		F. SHANLEY 10-4-66		
	2	4.00						EO B2	REVISED TRIM OF -29 & -31.	LTA-8 LM-1 & -2	✓				
	3	3.00, 4.00 1.00, 2.00							REVISED TRIM OF -23 & -31. CREATED -37 & -38. IN B/M ADDED -3, & -38. IN M/B. FOR -21: REMOVED LTA-8 EFF. IN M/B FOR -37 & -38: ADDED LTA-8 EFF. 1 EA. REQD./MOD.	LTA-8	✓	-21			
C	1	1.00, 2.00 3.00							REVISED TRIM OF -23 & -37.	LTA-8	✓		SHANLEY 11/17/66		
D	1	1.10 2.00 3.00						EO D1	IN FIELD REMOVED -35 & -36 FROM NOTE 5. IN B/M IN FINISH BLOCK FOR -35 & -36 SEE NOTE 6 WAS SEE NOTE 5. ADDED NOTE 6. FOR -29, -33 & -34 FINISH 76 WAS NONE.	LTA-8 LM-1 & LM-2	✓		HERB. SCHWETER 3-27-67		
	2	3.00	8A					EO D2	ADDED CUTOUT IN -15 & -27		✓				
	3	1.00 1.10						LEO280-428	FOR -13, -15, -29, -33, -34, -35 & -36 ADDED LM-3 THRU LM-15 EFF	LM-3 THRU LM-15	NOT	REQD			
	4	1.10 3.00	10B					EO D4	FOR -13, -25, -15 & -27: IML BUP OPEN 25° WAS IML BUP	LM-1 & LM-2	✓				
	5	1.10						EO D5	REF EO D4 ADDED LTA-8 TO EO EFF BLOCK	LTA-8	✓				

FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10945	D
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
D	6		3&7 B					EO D6	ON-23 TRIMMED 7/32 FLANGE 2 PLACES. ADDED SH 1.11	LTA-8	✓		HERB. SCHWETER 3-27-67		4-3-67
	7							EO D7	REF EO D6 REVISED TRIM OF-23	LTA-8	✓				
	8		9 A&B 8A 9A	LCD 19-1108					ON-13,-25,-29 & -31 ADDED COORDINATES. FOR -35 & -36 REMOVED LM-3 THRU LM-15 EFF. REMOVED IML & F/P FLANGE IN AREA OF CUT OUT FOR-29, EXTENDED CM LINE TO EDGE CF CUT OUT IN -29, (REASON DWG ERRORS).	LTA-8 LM-3 THRU LM-15	NOT	REQD			
	9		9A						ON-29 ADDED .069-.074 (#50 DRILL), ON-33 & -34 ADDED .069-.074 (#50 DRILL) (2), HOLES. ON-13 ADDED .069-.074 (#50 DRILL),	LM-3 THRU LM-15	-13,-19 & -34				
	10								REF EO D4 EFF LM-1 & LM-2 SHOULD BE LM-1 THRU LM-15	LM-1 THRU LM-15	NOT	REQD			
	11		9A						REMOVED -15 & ADDED -39	LM-3 THRU LM-15		-15			
E	1	3.00	1C		✓			LEO280-577	ADDED NOTE 7	LTA-8, LM-1 THRU LM-15	NOT	REQ'D	G. ENGEL 8 MAY 1968		
	2	3.00	6C				✓	EO E2	F/D REVISED TRIM OF-23	LTA-8	✓				
	3	1.00, 1.01 2.00, 3.00	6C 4B 6B			✓		EO E3 LCD1223, CCA548	ADDED CUTOUT IN -11, ADDED -41 & -43, ADDED SH 1.01 ADDED NOTE #8	LTA-8	✓				
	4	3.00	4C 6C	LFM 65		✓		EO E4 LCD20061, CCA756	REF EO E3 ADDED CUTOUT IN-23 WAS -11 ADDED NOTE #9	LTA-8	✓				
	5	1.00, 1.01 2.00, 4.00					✓	EO E5	IN F/D, LM & M/B ADDED -45 & -47. IN M/B REMOVED LM-2 THRU LM-15 EFF. FROM -29	LM-2 THRU LM-15	✓				
	6	1.00, 1.01		LFM 140		✓		LEO280-901 LCD2360	FOR -13, -33, -34, -39 & -45 REVISED N/A. N/A WAS LDW280-53279 FOR LM-4 (34) AND SUB.	LM-4 THRU LM-15	NOT	REQ'D			
	7	1.00, 1.01 2.00, 4.00 3.00	7E 4A 2A	LFM 140		✓		EO E7 LCD 2360	IN FIELD AND B/M CREATED -49, -50 AND -51. RESTRICTED -33 AND -34 TO LM-1(31) THRU LM-3(33) (WAS LM-1(31) THRU LM-15(45). RESTRICTED -45 TO LM-3 (WAS LM-3(33) THRU LM-15(45).	LM-4 THRU LM-15		✓			
	8	1.00, 1.01		LFM 126		✓		LCD1021-33CCA498	ON-35, -36, -37, -38, -41 & -43 ADDED END ITEM LFM 126 REQ.	LTA-8	NOT	REQ'D			
	9	1.01, 2.00 3.00 4.00	9A,B 5B,7D	LFM 126		✓		LCD1021-33-CCA498	ADDED -23-1, -25-1, -27-1 & -31-1						

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

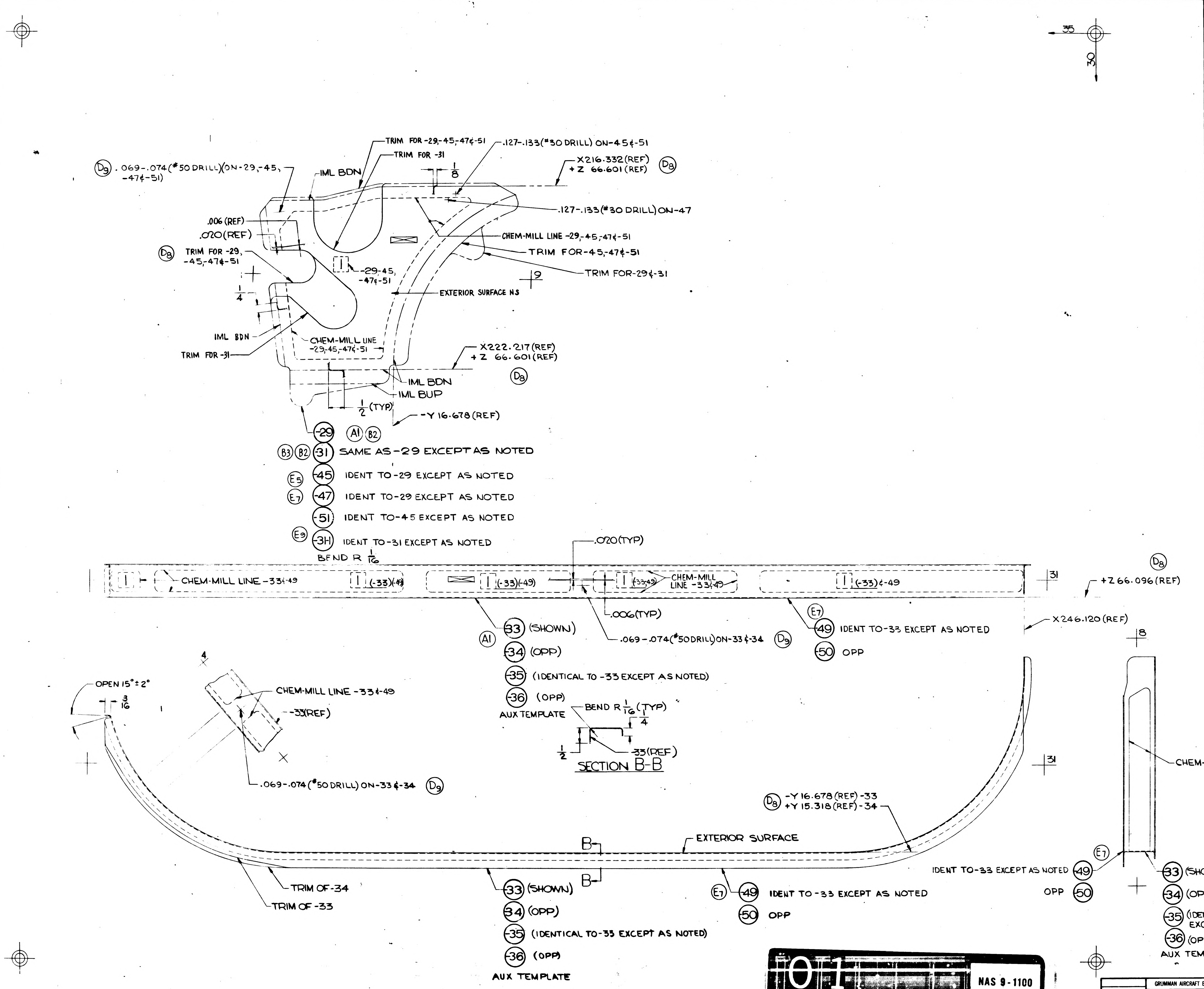
SIZE	CODE IDENT NO.		
B	26512	LDW280-10945	E
SCALE NONE		SHEET 1.11	

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-66

01

NAS 9-1100



8
7
6
5
4
3
2
1
35
30
TRIM FOR -29,-45,-47¢-51
TRIM FOR -31
.127-.133(#30 DRILL) ON-45¢-51
D9 .069-.074(#50 DRILL)(ON-29,-45,-47¢-51)
IML BDN
1/8
X216.332(REF)
+Z 66.601(REF)
D8
.127-.133(#30 DRILL) ON-47
.006 (REF)
.020(REF)
CHEM-MILL LINE -29,-45,-47¢-51
D8 TRIM FOR -29,-45,-47¢-51
TRIM FOR-45,-47¢-51
-29-45,-47¢-51
TRIM FOR-29¢-31
9
1/4
EXTERIOR SURFACE N.S
IML BDN
CHEM-MILL LINE -29,-45,-47¢-51
TRIM FOR -31
X222.217(REF)
+Z 66.601(REF)
D8
IML BDN
IML BUP
1/2 (TYP)
-Y 16.678 (REF)
-29 A1 B2
B3 B2 -31 SAME AS -29 EXCEPT AS NOTED
E5 -45 IDENT TO-29 EXCEPT AS NOTED
E7 -47 IDENT TO-29 EXCEPT AS NOTED
-51 IDENT TO-45 EXCEPT AS NOTED
E9 -3H IDENT TO-31 EXCEPT AS NOTED
BEND R 1/16
.020(TYP)
D8
CHEM-MILL LINE -33¢-49
(-33)(49)
(-33)(-49)
(-33)(49)
CHEM-MILL LINE -33¢49
(-33)¢-49
31
+Z 66.096(REF)
.006(TYP)
A1 -33 (SHOWN)
-34 (OPP)
.069-.074(#50 DRILL) ON-33¢-34 D9
E7 -49 IDENT TO-33 EXCEPT AS NOTED
-50 OPP
X246.120(REF)
8
4
OPEN 15°±2°
3/16
CHEM-MILL LINE -33¢-49
-33(REF)
-35 (IDENTICAL TO -33 EXCEPT AS NOTED)
-36 (OPP)
AUX TEMPLATE
BEND R 1/16 (TYP)
1/4
1/2
-33(REF)
SECTION B-B
.069-.074(#50 DRILL) ON-33¢-34 D9
31
CHEM-MILL LINE -33¢-49
D8 -Y 16.678 (REF)-33
+Y 15.318 (REF)-34
EXTERIOR SURFACE
B
B
TRIM OF-34
TRIM OF -33
-33 (SHOWN)
-34 (OPP)
-35 (IDENTICAL TO-33 EXCEPT AS NOTED)
-36 (OPP)
AUX TEMPLATE
E7 -49 IDENT TO -33 EXCEPT AS NOTED
-50 OPP
E7
IDENT TO-33 EXCEPT AS NOTED -49
OPP -50
-33 (SHOWN)
-34 (OPP)
-35 (IDENTICAL TO-33 EXCEPT AS NOTED)
-36 (OPP)
AUX TEMPLATE
01

NAS 9-1100

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD 10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE. MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS 1/32	
LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
E	26512	LDW280-10945	E
MODEL OR END ITEM	SCALE FULL		SHEET 4 OO

FOR PHOTO REPRODUCTION

LDW280-10945 F

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 140	LDW280-53279	LM-4(34)	1
LM	LDW 280-53279	LM-3(33)	1

PART NO.
LDW280-10945-39

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28279	LM-2(32)	1

PART NO. 280-10945-47

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28279	LTA-8(18)	1

PART NO.
LDW280-10945-23

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28279	LM-2(32)	1 EA
LM	LDW280-28279	LM-1(31)	1 EA

PART NO.
LDW 280-10945-11-15&-21

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28279	LTA-8(18)	1 EA

PART NO. LDW280-10945-
-25,-27,-31,

GAEC SCH NO. 30

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 126	LDW280-28279	LTA-8(18)	1 EA
LM	LDW280-28279	LTA-8(18)	1 EA

PART NO. LDW280-10945-35,-36,-37-38-41&-43

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LFM 140	LDW280-53279	LM-4(34)	1
LM	LDW280-53279	LM-3(33)	1
LM	LDW280-23279	LM-2(32)	1
LM	LDW280-28279	LM-1(31)	1

PART NO. LDW280-10945-13,

GAEC SCH NO. 30

FOR ADDITIONAL USAGE INFORMATION SEE SH 1.01 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	1.11	2.00	3.00	4.00		
REV	F	D	E	F	F	E		
SHEET	1.01		1.12	2.01				
REV	F		F	F				
SHEET								
REV								

LAST SECT LTR USED	B-B	GRUMMAN REL INFO F	
LAST DASH NO. USED	-57	PRIM NO. 215	JK(OOL) ME-IF-4/19/9

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 LINE ITEM #1 DOCUMENTATION TYPE II

DRAWN BY	SALVADOR 4-4-66	RELIABILITY	
LAYOUT BY	SALVADOR 4-4-66	THERMO	A.J.KATZ 4-28-66
CHECKED BY	CWB		
GR LEADER	J.PUSATERI 4-4-66		
VEH DESINT	W.BISCHOFF 4-4-66		
STRUCTURES	AJP JV FEB 4-5-66	PROJ ENGR	J.ALBER/RMC 4-28-66
STRUCTURES	HILDERMAN 4-5-66	REL GROUP	A.CARAMANICA 5-2-66
WEIGHTS	D.ROBESCH 4-8-66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SHIELD
ASCENT STAGE-CABIN-FRONT
FACE-LOWER-SHIELD

SIZE B CODE IDENT NO. 26512 LDW280-10945 F

SCALE NONE SHEET 1.00 OF 9

ENG 77.1 12-65

REV "E" CDR 5-22-68

SUPERSEDES LDW280-10945 "NO CHANGE"

01

NAS 9-1100

LDW280-10945 E

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54279	LM-15(45)	1
		THRU	
LM	LDW280-54279	LM-6(36)	1
PART NO. LDW280-10945-57			
LM	LDW280-54279	LM-15(45)	1 EA
		THRU	
LM	LDW280-54279	LM-5(35)	1 EA
PART NO. LDW280-10945-53&-55			
LM	LDW280-53279	LM-3(33)	1
PART NO. LDW280-10945-39-1			
LM	LDW280-28279	LM-1 (31)	1
PART NO. LDW280-10945-29			
LFM 140	LDW280-53279	LM-4(34)	1 EA.
LM	LDW280-53279	LM-3(33)	1EA
LM	LDW280-28279	LM-2(32)	1EA
LM	LDW280-28279	LM-1(31)	1EA
PART NO. LDW280-10945-33,-34			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LFM 140	LDW280-53279	LM-4(34)	1
LM	LDW280-53279	LM-3(33)	1
PART NO. LDW280-10945-45			
LFM126	LDW280-28279	LTA-8(18)	1 EA
PART NO. LDW280-10945-23-1,-25-1,-27-1,-31-1		126	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54279	LM-15(45)	1EA
		LM-14(44)	1EA
		LM-13(43)	1EA
		LM-12(42)	1EA
		LM-11(41)	1EA
		LM-10(40)	1EA
		LM-9(39)	1EA
		LM-8(38)	1EA
		LM-7(37)	1EA
LM		LM-6(36)	1EA
LFM 140	LDW280-54279	LM-5(35)	1EA
PART NO. LDW280-10945-49,-50,-51			

~~SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH~~

SHEET									
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED

GRUMMAN REL INFO

PRIM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO.

LINE ITEM

DOCUMENTATION TYPE

DRAWN BY

LAYOUT BY

CHECKED BY

PROJ ENGR

REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10945	F
SCALE	NONE	SHEET 1.01 OF	

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
F	1	1.01 2.00 3.00	8A						INC EO F1. ADDED SH. 1.12	LM-3(33)			H. STEVES 2-28-69		
	2	100		LFM 140					INC LEO 280.-1062.	LM-4(34)					
	3	1.00		LFM 140					INC LEO 280.-1063.	LM-4(34)					
	4	1.01 2.01 3.00							INC EO F4. ADDED SH. 2.01	LM-5(35) THRU LM-15(45)					
	5	1.01, 2.01 3.00		0					INC EO F5.	LM-6(36) THRU LM-15(45)		H.D.			
	6	3.00							INC EO F6	LM-5 THRU LM-15			G. GREINER 2-28-69		
	7	3.00							INC EO F7	LM-5 THRU LM-15		H.D.	E.C.G.		
	8	2.00 3.00	1B						INC EO F8	LM-7 THRU LM-15		H.D.	G.D. 4-1-69	4-18-69	

CHG APPROVED				
LTR	GROUP LDR	V.D.I.	STRUCT.	
F				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10945	F
SCALE NONE			SHEET 1.12

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10945-39-1	E	SHIELD	MAKE FROM	LDW280-10870			NONE	NONE	9A
		LDW280-10945-31-1	E	SHIELD	MAKE FROM	LDW280-11310	-13-4		NONE	NONE	6D
		-27-1	E	SHIELD	MAKE FROM	LDW280-11310	-13-4		NONE	NONE	9A
		-25-1	E	SHIELD	MAKE FROM	LDW280-11310	-13-4		NONE	NONE	9B
		-23-1	E	SHIELD	MAKE FROM	LDW280-11310	-13-4		NONE	NONE	5C
		-51	E	SHIELD	AL ALLOY SH	QQ-A-250/5	2024-O	.020 X 8 X 9	T42/CM	NOTE 5	6E
		-50	E	CHANNEL	SEE NOTE 12	QQ-A-250/5	2024-O	.020 X 5 X 39	T42/CM	NOTE 5	4A
		-49	E	CHANNEL	SEE NOTE 12	QQ-A-250/5	2024-O	.020 X 5 X 39	T42/CM	NOTE 5	4A
		-47	E	SHIELD	AL ALLOY SH	QQ-A-250/4	2024	.020 X 8 X 9	T42/CM	76	6E
		-45	E	SHIELD	AL ALLOY SH	QQ-A-250/4	2024	.020 X 8 X 9	T42/CM	76	6E
		-43	E	COVER	AL ALLOY SH	QQ-A-250/4	2024-T3	.020 X 7 X 7	NONE	NOTE 8	6B
		-41	E	DOUBLER	AL ALLOY SH	QQ-A-250/4	2024-T3	.020 X 7 X 8	NONE	NOTE 8	4B
		-39	E	SHIELD	MAKE FROM LDW280-10870				NONE	NONE	9A
		-38		ANGLE	AL ALLOY SH	QQ-A-250/5	SEE NOTE 2	.020 X 6 7/8 X 21	NONE	NONE	5A
		-37		ANGLE	AL ALLOY SH	QQ-A-250/5	SEE NOTE 2	.020 X 6 7/8 X 20	NONE	NONE	5A
		-36		CHANNEL	AL ALLOY SH	QQ-A-250/4	2024	.020 X 2 5/8 X 36 1/2	T42	SEE NOTE 6	4A
		-35						.020 X 2 5/8 X 36 1/2	T42	SEE NOTE 6	4A
		-34						.020 X 4 7/8 X 38 3/4	T42/CM	76	4A
		-33		CHANNEL				.020 X 4 1/8 X 38 3/4	T42/CM	76	4A
		-31		SHIELD				.020 X 8 X 9 1/8	T42	NOTE 5	6E
		-29			AL ALLOY SH	QQ-A-250/4	2024	.020 X 10 1/8 X 11 3/8	T42/CM	76	6E
		-27			MAKE FROM LDW280-11310				NONE	NOTE 5	9A
		-25			MAKE FROM LDW280-11310				NONE	NOTE 5	9B
		-23		SHIELD	MAKE FROM LDW280-11310				NONE	NOTE 5	5B
		-21		ANGLE	AL ALLOY SH	QQ-A-250/5	SEE NOTE 2	.020 X 6 7/8 X 43 1/4	NONE	NONE	5A
		-15		SHIELD	MAKE FROM LDW280-10870				NONE	NONE	5A
		-13		SHIELD	MAKE FROM LDW280-10870				NONE	NONE	9B
		LDW280-10945-11	E	SHIELD	MAKE FROM LDW280-10870				NONE	NONE	[illegible]

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						CM	CHEM-MILLING	LSP14-26100
						76	ALODINE	LSP14-9010
						T42	HEAT TREAT	MIL-H-6080

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10945	F

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10945-57	E	SHIELD	AL ALLOY SH	QQ-A-430	5056-H191	.004 × 14 × 46	NONE	NOTE 10	5B
		LDW280-10945-55	E	SHIELD	AL ALLOY SH	QQ-A-430	5056-H191	.004 × 10 × 32	NONE	NOTE 10	9A
		LDW280-10945-53	E	SHIELD	AL ALLOY SH	QQ-A-430	5056-H191	.004 × 5 × 26	NONE	NOTE 10	9B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

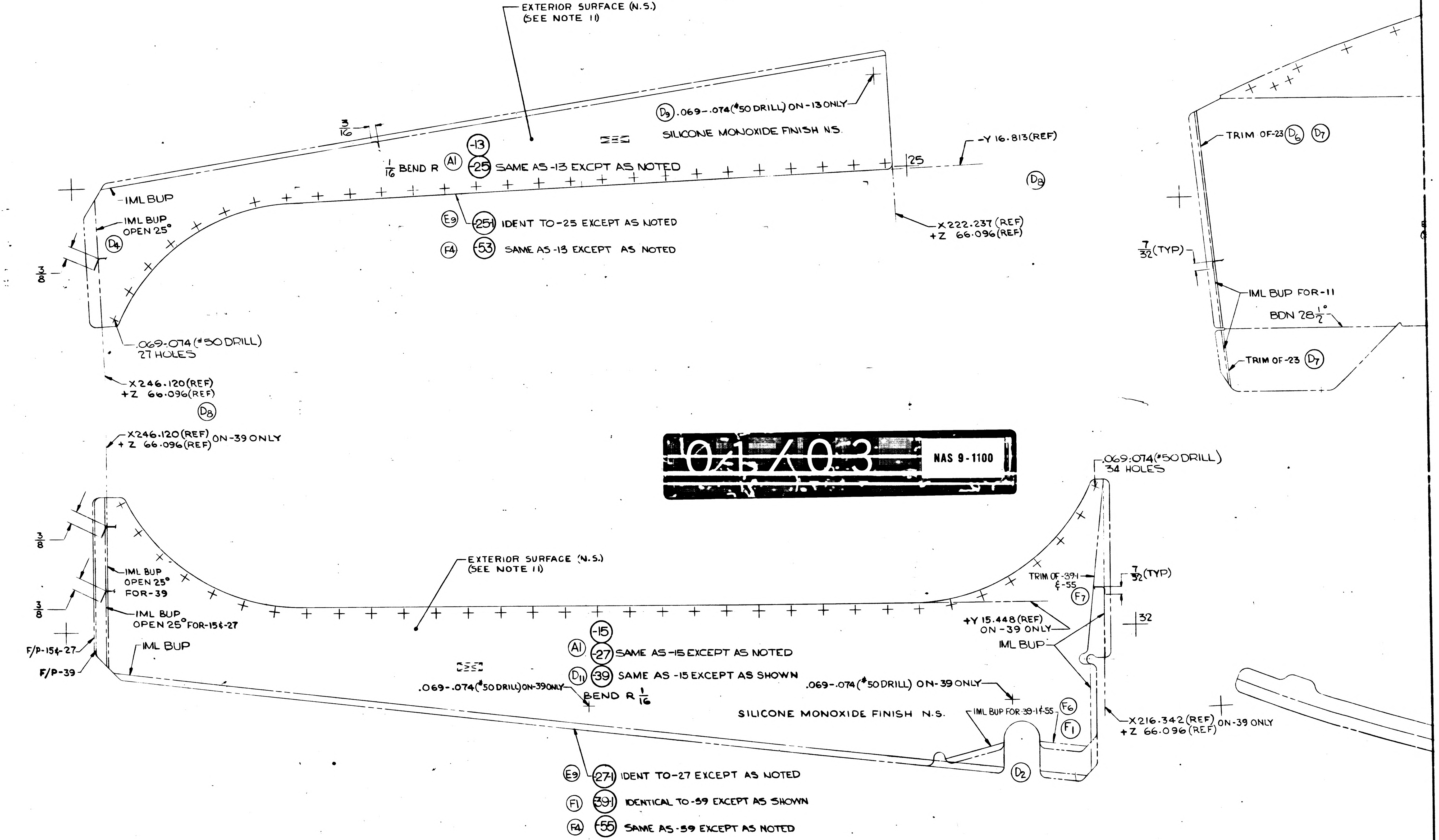
SIZE B
CODE IDENT NO. 26512
LDW280-10945
F

SCALE NONE
SHEET 2.01

ENG 77.2 7-65

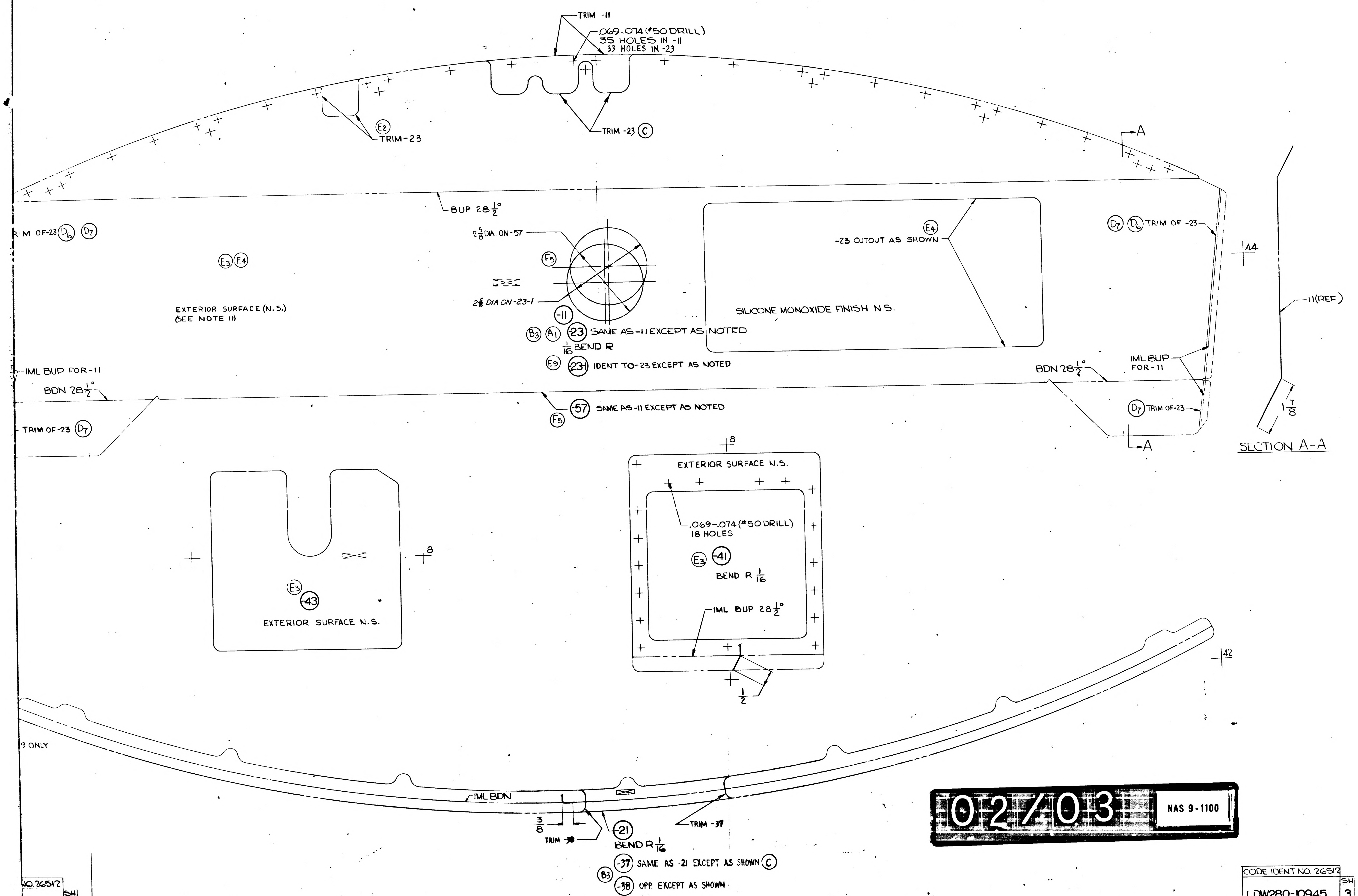
01

NAS 9-1100


EXTERIOR SURFACE (N.S.) (SEE NOTE 11)
(D9) .069-.074(#50 DRILL) ON-13 ONLY
SILICONE MONOXIDE FINISH N.S.
3/16
1/16 BEND R
(A1) -13 -25 SAME AS -13 EXCPT AS NOTED
-Y 16.813(REF)
.25
(D9)
IML BUP
IML BUP OPEN 25°
(D4)
3/8
(E9) -251 IDENT TO -25 EXCEPT AS NOTED
(F4) -53 SAME AS -13 EXCEPT AS NOTED
X222.237 (REF) +Z 66.096(REF)
.069-.074 (#50 DRILL) 27 HOLES
X246.120(REF) +Z 66.096(REF)
(D8)
TRIM OF-23 (D6) (D7)
7/32 (TYP)
IML BUP FOR-11
BDN 28 1/2°
TRIM OF-23 (D7)
X246.120(REF) +Z 66.096(REF) ON-39 ONLY
.069-.074(#50 DRILL) 34 HOLES
3/8
IML BUP OPEN 25° FOR-39
3/8
IML BUP OPEN 25° FOR-15 & -27
EXTERIOR SURFACE (N.S.) (SEE NOTE 11)
TRIM OF -391 & -55
(F7)
7/32 (TYP)
.32
+Y 15.448 (REF) ON-39 ONLY
IML BUP
F/P-15 & -27
F/P-39
IML BUP
-15
(A1) -27 SAME AS -15 EXCEPT AS NOTED
(D11) -39 SAME AS -15 EXCEPT AS SHOWN
.069-.074(#50 DRILL) ON-39 ONLY
BEND R 1/16
.069-.074(#50 DRILL) ON-39 ONLY
SILICONE MONOXIDE FINISH N.S.
IML BUP FOR 39-1 & -55
(F6)
(F1)
X216.342 (REF) +Z 66.096 (REF) ON-39 ONLY
(D2)
(E9) -271 IDENT TO -27 EXCEPT AS NOTED
(F1) -391 IDENTICAL TO -39 EXCEPT AS SHOWN
(F4) -55 SAME AS -39 EXCEPT AS NOTED

01/03 NAS 9-1100

CODE IDENT NO. 26512
LDW280-10945 SH 3

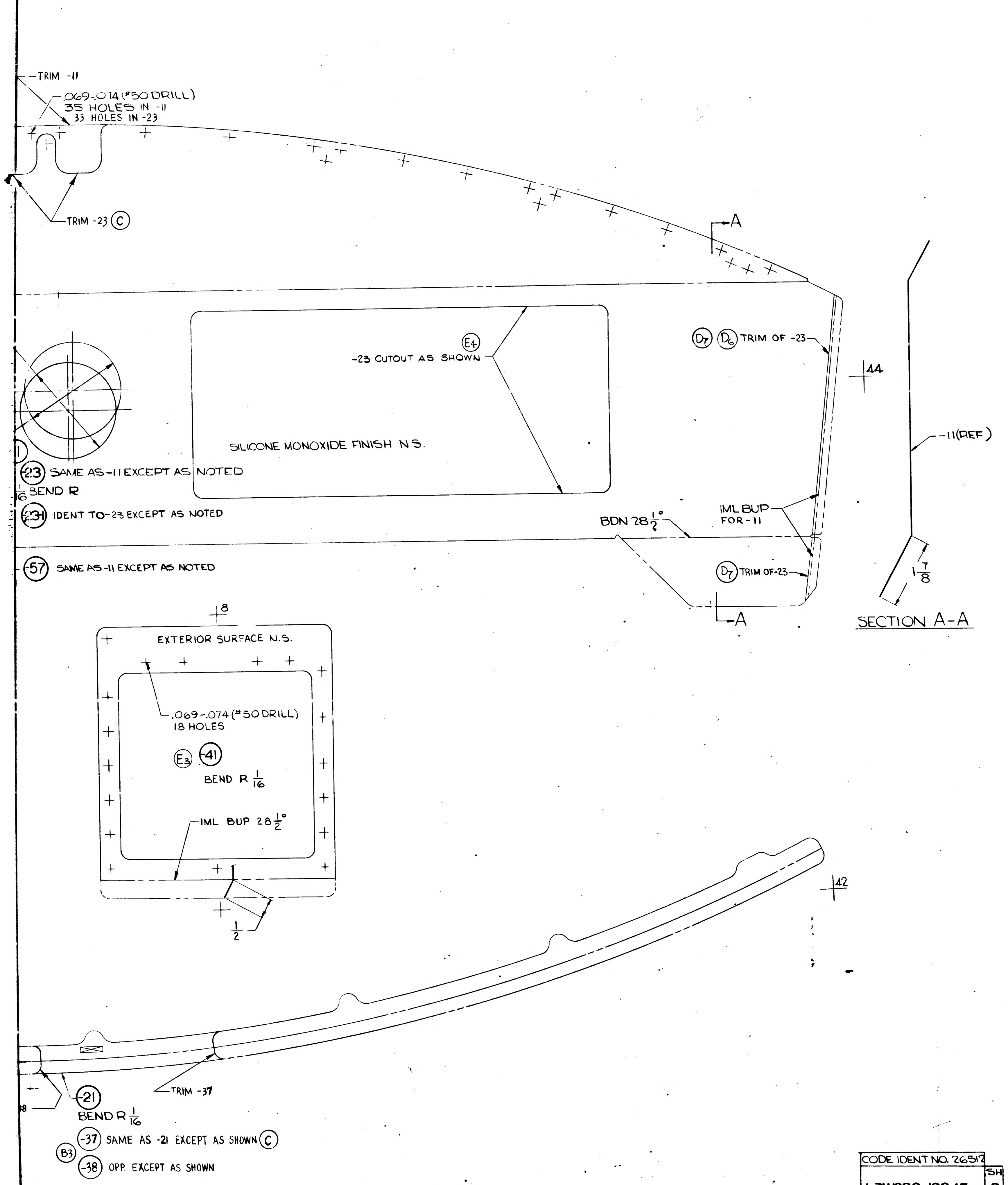

TRIM -11
.069-.074 (#50 DRILL)
35 HOLES IN -11
33 HOLES IN -23
E2
TRIM-23
TRIM -23 C
A
A
BUP 28 1/2°
R M OF-23 D6 D7
D7 D6 TRIM OF -23
E4
-23 CUTOUT AS SHOWN
44
2 5/8 DIA ON -57
F5
E3 E4
EXTERIOR SURFACE (N.S.)
(SEE NOTE 11)
2 5/8 DIA ON -23-1
-11
B3 A1 23 SAME AS -11 EXCEPT AS NOTED
1/16 BEND R
E9 -231 IDENT TO -23 EXCEPT AS NOTED
SILICONE MONOXIDE FINISH N.S.
-11 (REF)
IML BUP FOR -11
BDN 28 1/2°
BDN 28 1/2°
IML BUP FOR -11
-57 SAME AS -11 EXCEPT AS NOTED
F5
TRIM OF -23 D7
D7 TRIM OF -23
1 7/8
SECTION A-A
8
EXTERIOR SURFACE N.S.
.069-.074 (#50 DRILL)
18 HOLES
E3 -41
BEND R 1/16
8
E3
-43
EXTERIOR SURFACE N.S.
IML BUP 28 1/2°
1
1/2
42
9 ONLY
IML BDN
3/8
TRIM -38
-21
BEND R 1/16
TRIM -37
-37 SAME AS -21 EXCEPT AS SHOWN C
B3
-38 OPP EXCEPT AS SHOWN
NO. 26512
0945 SH 3
6
5
4
3
2
7

02/03

NAS 9-1100

CODE IDENT NO. 26512

LDW280-10945 SH 3



90
30
-TRIM -11
.069-.074 (#50 DRILL)
35 HOLES IN -11
33 HOLES IN -23
TRIM -23 (C)
A
E4
-23 CUTOUT AS SHOWN
D7 D6 TRIM OF -23
44
SILICONE MONOXIDE FINISH N.S.
-23 SAME AS -11 EXCEPT AS NOTED
1/16 BEND R
-231 IDENT TO -23 EXCEPT AS NOTED
BDN 28 1/2°
IML BUP FOR -11
-11 (REF)
-57 SAME AS -11 EXCEPT AS NOTED
D7 TRIM OF -23
A
1 7/8
SECTION A-A
8
EXTERIOR SURFACE N.S.
.069-.074 (#50 DRILL)
18 HOLES
E3 -41
BEND R 1/16
IML BUP 28 1/2°
1/2
42
-21
BEND R 1/16
TRIM -37
B3
-37 SAME AS -21 EXCEPT AS SHOWN (C)
-38 OPP EXCEPT AS SHOWN

CODE IDENT NO. 26512

LDW280-10945 SH 3

NOTES

1- NO TOOLING HOLES PERMITTED IN PARTS.

2- MAKE LDW280-10945-21 FROM 2024-T3 ALCLAD BOTH SIDE (SKIN QUALITY). FINISH ALUMALITE 200/R1/EB10 WHICH MAY BE PURCHASED FROM ALUMINUM CO. OF AMERICA (CODE IDENT 01634).

3- BOTH SIDES OF -21 SHALL BE PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROLL PRODUCTS INC FARMINGDALE, NY

~~4- ON -17 -19 & -20 THE INTERIOR SURFACE TO BE CHEM-MILLED IN ACCORDANCE WITH LSP14-26100 FINISH ENTIRE SURFACE #76 (LSP14-9010)~~

5. FINISH LDW280-10945-23 -25, -27, -31, -49, -50 & -51 PER LDW280-11367

6. FINISH -35 & -36 AS FOLLOWS:
   (A) VAPOR DEGREASE PER LSP14-7010.
   (B) ALKALINE CLEAN PER LSP14-7030.
   (C) DEOXIDIZE PER LSP14-7020 WITH "HEAVY DUTY ALUMINUM DEOXIDIZER" EXCEPT THE BATH IMMERSION TIME SHALL BE 10 ± 1/2 MINUTES.
   (D) CHROMIC ACID ANODIZE PER LSP14-9030 EXCEPT THAT THE TOTAL ANODIZING TIME CYCLE SHALL BE 65 ± 1/2 MINUTES.

7. MATERIAL, FINISHES, HANDLING & PERMISSIBLE DEVIATIONS OF LM ASCENT STAGE THERMAL SHIELD SKINS PER LPC280-16

8. EXTERIOR SURFACE OF -41 & -43 TO BE PREFINISHED WITH ALUMALITE 200/R1/EB10. INTERIOR SURFACE OF -41 & -43 TO BE FINISH #76 (LSP 14-9010)

9. THIS DWG AFFECTED BY THE FOLLOWING LFM. SEE LFM 65 FOR EFFECTIVITY AND MODIFICATION.

10. -53, -55 & -57 TO BE PRE-FINISHED PER LEI 280-015. SURFACE DESIGNATED "EXTERIOR" TO BE PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROLL PRODUCTS INC., FARMINGDALE, N.Y.

11. FOR -53, -55 & -57 SILICONE MONOXIDE FINISH IS NOT TO BE USED.

12. ALTERNATE MATERIAL, MAY BE MADE FROM .032 2024-0, CLAD ONE SIDE AL ALLOY SH, PER AMS4077, ALL CHEM-MILLING TO BE ACCOMPLISHED ON BARE SURFACE. (ON LM-7 THRU LM-15)

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ƒ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 34 X 106

29 SQ. FT.
7.5 SQ. FT.

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 1/7) =
1/2 SIZE SHEET AREA (1/4 OF FULL) =

PRINT TRIM LINE

LDW280-10945-29, 33-34, -45, -47, -49, -50 & -51

CHEM-MILL LINE TOLERANCE ± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED) ± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	*DEPTH OF CUT
☐ I	.006 ± .002	.014 (REF)
☐		
☐		

LDW280-10945 F

03/03

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK				
SIZE J	CODE IDENT NO. 26512	LDW280-10945		F
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

3FR

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 901
CONTROL INFO NO. LDW280B2729

ON FOLLOWING DWGS, FOR DASH No. ✳ REVISE AS FOLLOWS:

N/A FOR LM-4(34) AND SUB. WAS LDW280-53279, NOW LDW280-54279 AS NOTED.

DWG NO.	DASH No. ✳	CHG. No.	EFFECTIVITY
LDW280 P10869	-11	B7	LM-4(34) THRU LM-15(45)
P11041	-13, -15, -17, -21	C3	
-10743	-13, -17, -19	F6	LM-4(34) THRU LM-15(45)
	-15		LM-4(34) AND LM-5(35)
	-15-1		LM-6(36) THRU LM-15(45)
-10945	-13, -33, -34 -39, -45	E6	LM-4(34) THRU LM-15(45)
-11042	-15	A2	
-11043	-11, -13, -15	A3	
-11044	-12 -13 -21, -22, -23	A8	
-11060	-19, -21 -23, -29	A6	
-11061	-11	A2	
-11062	-11	A2	
-11729	-11, -12, -13 -14, -15, -16	A2	
-11736	-11, -13, -14	A1	
LDW 280 -14344	-1, -3	E5	LM-4(34) THRU LM-15(45)

01 NAS 9-1100

LFM

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCR 2360 PKG #27

REASON FOR EO: INCREASE IN PLUME SHIELD PROTECTION

DESCRIPTION OF EO: FOR ✳ REVISED N/A. N/A WAS LDW280-53279 FOR LM-4(34) AND SUB.

GAEC EO RELEASE: (5) JC 3/28/8

MODEL	~~PROCURING ACTIVITY NO.~~ E1	GAEC UNIT NO.	~~SUB CONTR UNIT NO~~
LM	LM 140	LM-4(34), L	M-5(35)
LM		LM-6(36) THRU	
		LM-15(45)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO

DISPOSITION OF PARTS: NOT REWORK | REQ SCRAP

APPROVED BY								
DATE	3/25/68	3/26/68		3/25/68	3/26/68		3/26/68	3/27/68
—	VDI	~~THERMO~~ ~~SUPPORT~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONF.~~

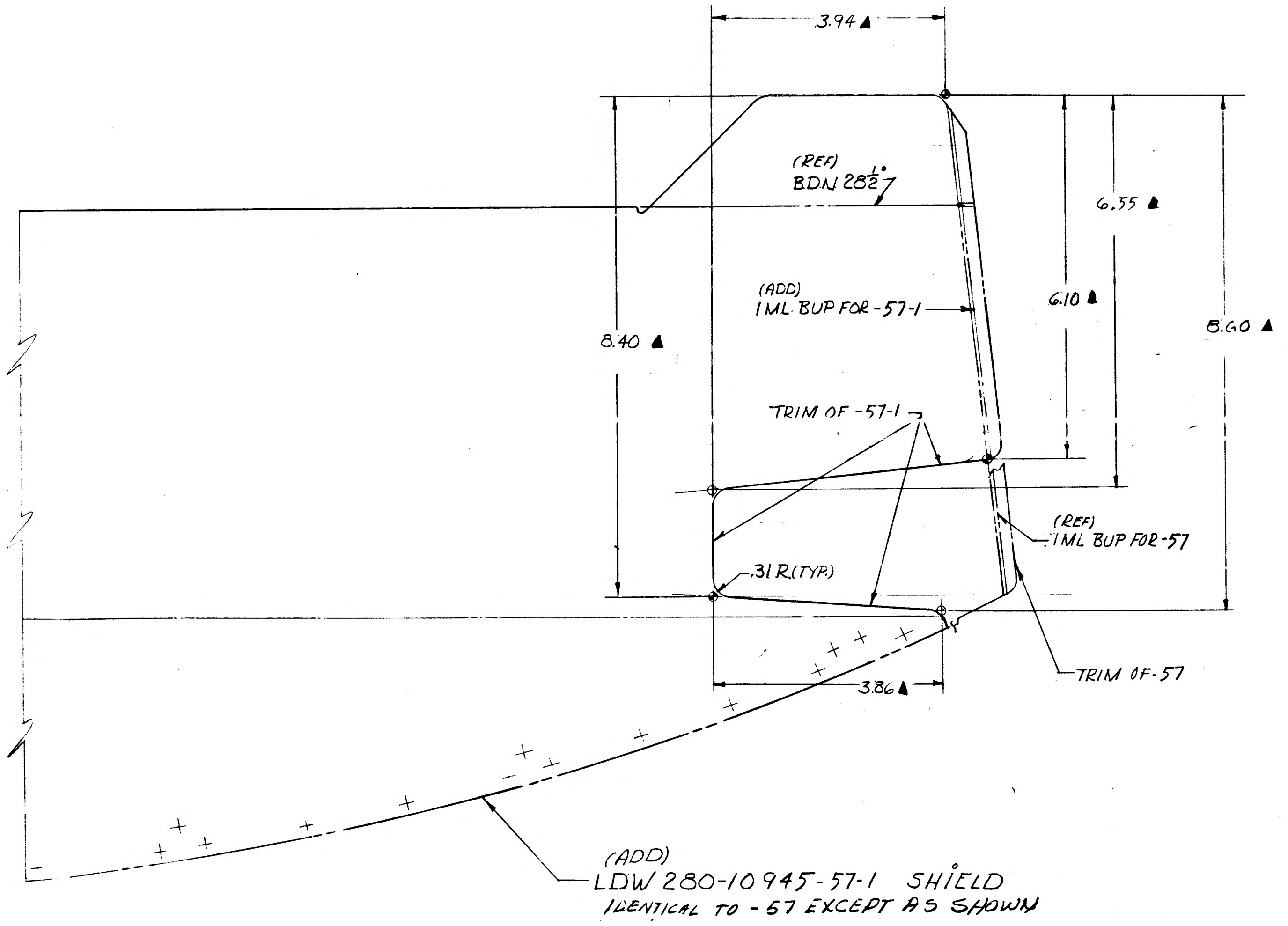
PRIORITY: C

DRAWING TITLE: SEE DWG.

DRAWING NO.: LEO 280

EO NO.: 901

3/28/68 ISSUED BY D. LOZINSKI X1641 SECTION VEH DES INT. GROUP NO. 335 PL 25


3.94▲
(REF)
BDN 282½°
6.55▲
(ADD)
IML BUP FOR -57-1
6.10▲
8.40▲
8.60▲
TRIM OF -57-1
(REF)
IML BUP FOR -57
.31 R (TYP)
3.86▲
TRIM OF -57
(ADD)
LDW 280-10945-57-1 SHIELD
IDENTICAL TO -57 EXCEPT AS SHOWN

E.O. NOTE:
PICTURE ROTATED 180° FROM DWG.
REWORKED AREA LOCATED IN
ZONE 7B-C

01

NAS 9-1100

Δ = LOFTED DWG DIMS: NOT TO BE INCORP ON DWG.

DWG SIZE X
PRINT TRIM LINE
PRINTING INFO ONLY
FULL SIZE SHEET AREA (30 x 48) = 5.3 SQ FT
¼ SIZE SHEET AREA (¼ OF FULL) = ~ SQ FT

DETAIL SPEC REQD	
CLASS II ENGRG CHG	
CLASS I ENGRG CHG	✓
	LCD 3994 PKG 13
CONTROL INFO NO	LDW280B9900
REASON FOR EO	ADDITION OF DISCONNECT FOR INCREASED PLSS RECHARGE PRESSURE
DESCRIPTION OF EO	IN M/B RESTRICTED-57 EFF LM6(36) THRU LM9(39) & LM15(45) ADDED LDW280-10945-57-1 EFF LM10(40) THRU LM14(44)
GRUMMAN EO RELEASE	WB 5-7 / JK 2/10/70

MODEL	PROCURING ACT. NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM10 (40)	
		THRU	
		LM 14(44)	

DRAWING REVISION REQD		DISPOSITION OF PARTS									
✓		✓		BY					cw		
				DATE	2-5-70	2/9/70		2/4/70	2-5-70		2-9-70
REVISE DWG	RECORD EO	REWORK	SCRAP		VDI	SUPPORT THERMO	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGR

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SHIELD ASCENT STAGE CABIN FRONT FACE LOWER SHIELD	LDW280-10945	G1

ENGINEERING ORDER

ISSUED BY P KEISER SECTION V.D.I. 2/ /70 GROUP NO. 335 PL 25

CODE IDENT NO. 26512

GRUMMAN AIRCRAFT ENGINEERING CORP
BETHPAGE, L. I., N. Y.

ENG 32.3 REV 3-65

CDR 2-16-70

LDW280-10946 A

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53179	LM-5(35)	2
LM	LDW280-53179	LM-4(34)	2
LM	LDW280-53179	LM-3(33)	2

PART NO. LDW280-10946-27

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53179	LM-5(35)	1EA
LM	LDW280-53179	LM-4(34)	1EA
LM	LDW280-53179	LM-3(33)	1EA

PART NO. LDW280-10946-19 THRU -26 | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28179	LEM-2(32)	1EA
LM	LDW280-28179	LEM-1(31)	1EA

PART NO. LDW280-10946-11-12-13 & -14 | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM-188	LDW280-28179	LTA-8(18)	1EA

PART NO. LDW280-10946-1,-3,-5 & -7

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28179	LTA-8(18)	1EA

PART NO. LDW280-10946-15-16 -17 & -18 | GAEC SCH NO. 30-

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	2.01	3.00	4.00			
REV	A	A	A	A	A	A			
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	H	GRUMMAN REL INFO A	
LAST DASH NO. USED	-65	PRIM NO. 215	VS(001) MP-16A-5318

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM * 1 | DOCUMENTATION TYPE II

DRAWN BY	TMACAULAY 6-6-66	RELIABILITY	
LAYOUT BY	FCURASI 6-10-66		
CHECKED BY	EGO 6-8-66		
GR LEADER	J. Pusateri 6-14-66		
VEH DES INT	6/11		
STRUCTURES	6/13	PROJ ENGR	Plunkett 28 Jun 66
STRUCTURES	Wilderman 6/13	REL GROUP	Bott. 6-30-66
WEIGHTS	A. Rabinowitz 6-24		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SHIELD
ASCENT STAGE - CABIN - RCS SHIELD - FWD

SIZE B | CODE IDENT NO. 26512 | LDW280-10946 | A
SCALE NONE | SHEET 1.00 OF 6

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPL
A	1	1.10,3.00	6C					E0A1	IN FIELD: REVISED F/P OF-11 ADDED SH 1.10	LM-1, LM-2	✓		G. ZARCADOOLAS 8/1/68		
	2	1.00,2.00, 3.00	5B 8B					E0A2	ADDED-19,-20,-21 & -22	LM-3 THRU LM-15	NOT	REQD			
	3	3.00	8B 2C					E0A3	TRIMMED FLANGES ON-16 & -18	LTA-8(18)	✓				
	4	3.00			✓			LE0280-502	ADDED NOTE 5	LTA-8, LM-1 THRU LM-15	✓				
	5	3.00	7C				✓	E0A5	FLD OF DWG: FOR-12 REVISED TRIM	LM-1, LM-2	✓				
	6	1.00,2.00 3.00	3A 3B 7A 8B				✓	E0A6	IN FLD (ON-19,-20,-21 & -22) REVISED TRIM- IN FLD, B/M & MOD BLK ADDED-23,-24,-25,-26 & -27	LM-3 THRU LM-15	✓				
	7	1.00,2.01 4.00,3.00		LFM-188		✓		LCD 3179	ADDED -1,-3,-5,-7,-9, & -31 ASSY. ADDED -33 THRU -65 SH 2.01, 4.00 & NOTES 6 THRU 12. B. MAG. WCG	LTA-8(18)	NOT	REQD			
	8	1.00				✓		LCD 3179	① IN MOD/BLK FROM -19 THRU -27 REMOVE LM-6 (36) THRU LM-15 (45) EFF B. MAG. WCG	LM-6 THRU LM-15		✓	G. ENGEL 8-6-68		8-8-68

CHG APPROVED							
LTR	GROUP LDR	VEHDSGINT	STRUCTURES	STRUCTURES	WEIGHTS	THERMO	
A	8/7/68	8-7-68	CL 8/7/68	8/7/68		8-7-68	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10946	A ①
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10946-27	E	CLIP	AL ALLOY SH	QQ-A-250/5	SEE NOTE 2	.020 X 2 X 3	NONE	76	3B
		-26						.020 X 2 X 3		76	7A
		-25						.020 X 2 X 3		76	7A
		-24						.020 X 2 X 3		76	8B
		-23		CLIP		QQ-A-250/5	SEE NOTE 2	.020 X 2 X 3	NONE	76	8B
		-22		SHIELD		QQ-A-250/5	SEE NOTE 2	.020 X 26 X 50	CM	NOTE 4	5B
		-21						.020 X 26 X 50			5B
		-20						.020 X 25 X 33			8B
		-19			AL ALLOY SH	QQ-A-250/5	SEE NOTE 2	.020 X 28 X 33	CM	NOTE 4	8B
		-18			MAKE FROM LDW 280-11310			23 1/4 X 47	NONE	NONE	5B
		-17						23 1/4 X 47			5E
		-16						22 3/4 X 30 1/2			8E
		-15			MAKE FROM LDW 280-11310			25 1/4 X 30 1/2	NONE	NONE	8B
		-14			AL ALLOY SH	QQ-A-250/5	SEE NOTE 2	.020 X 25 1/2 X 49 1/4	CM	NOTE 4	5B
		-13						.020 X 25 1/2 X 49 1/4			5B
		-12						.020 X 25 X 32 3/4			8B
		LDW280-10946-11	E	SHIELD	AL ALLOY SH	QQ-A-250/5	SEE NOTE 2	.020 X 27 1/2 X 32 3/4	CM	NOTE 4	8B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
CM	CHEM-MILL AL	LSP14-26100
76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-10946 A

SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

-31	-29	-9	-7	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								MS20470B3	E	RIVET	STD PART						
								MS20426B3		RIVET	STD PART						
			6	15		23		GW10S-7PSIC		WASHER	GRUMMAN STD						
			2	2	2			GW10N-3		WASHER	GRUMMAN STD						
1								LDW280-10946-63		SKIN	SEE NOTE 8				NONE	NONE	11B
1		1						-61		MESH	SEE NOTE 9				NONE	NONE	11B
			1					-59		SKIN	SEE NOTE 7				NONE	NOTE 7	11C
			1					-57		FRAME	SEE NOTE 11				NONE	NOTE 11	11B
	1							-55		SKIN	SEE NOTE 8				NONE	NONE	12C
	1							-53		MESH	SEE NOTE 9				NONE	NONE	12B
	1							-51		MESH	SEE NOTE 9				NONE	NONE	12C
				1				-49		SKIN	SEE NOTE 7				NONE	NOTE 7	13C
				1				-47		FRAME	SEE NOTE 11				NONE	NOTE 11	12B
						1		-65		CLIP	SEE NOTE 8				NONE	NONE	15A
					1			-45		SKIN	SEE NOTE 10				NONE	NOTE 10	14B
					1			LDW280-10946-43		FRAME	SEE NOTE 11				NONE	NOTE 11	14A
			AS REQD	AS REQD	AS REQD	AS REQD		GT835P-8		TAPE	GRUMMAN STD						
		1						LDW280-10946-41		SKIN	SEE NOTE 8				NONE	NONE	15B
		1						-39		MESH	SEE NOTE 9				NONE	NONE	15B
		1						-37		MESH	SEE NOTE 9				NONE	NONE	16B
						1		-35		SKIN	SEE NOTE 7				NONE	NOTE 7	16B
						1		-33		FRAME	SEE NOTE 11				NONE	NOTE 11	15A
			1					-31		WELD ASSY	SEE NOTE #6				NONE	NONE	11A
				1				-29		WELD ASSY	SEE NOTE #6				NONE	NONE	12A
						1		-9		WELD ASSY	SEE NOTE #6				NONE	NONE	15A
								-7		SHIELD ASSY					NONE	NONE	11A
								-5		SHIELD ASSY					NONE	NONE	12A
								-3		SHIELD ASSY					NONE	NONE	14A
								LDW280-10946-1	E	SHIELD ASSY					NONE	NONE	15A

QTY PER ASSEMBLY

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

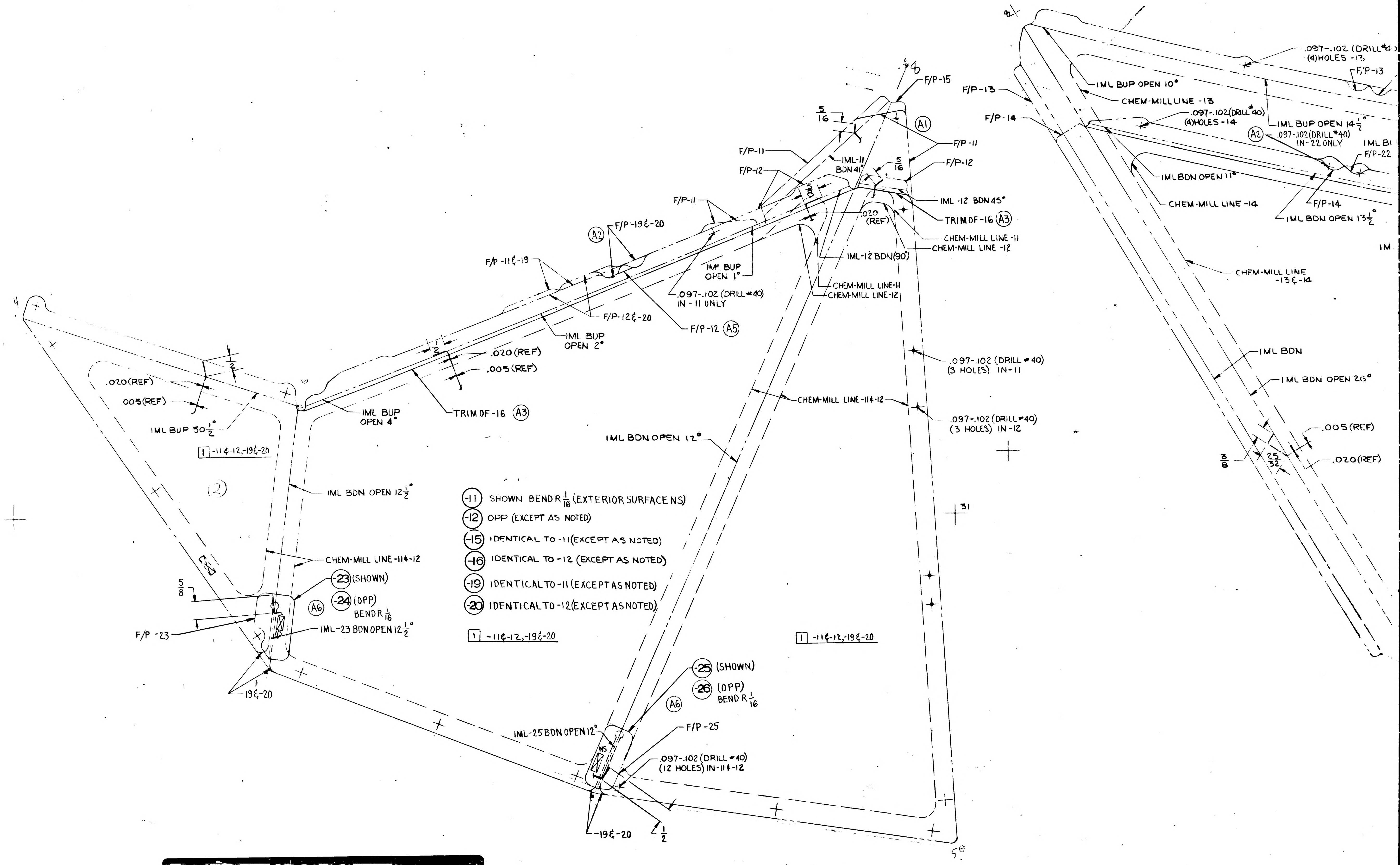
SIZE	CODE IDENT NO.		
B	26512	LDW280-10946	A

SCALE NONE SHEET 2.01

ENG 77.2 7-65

01

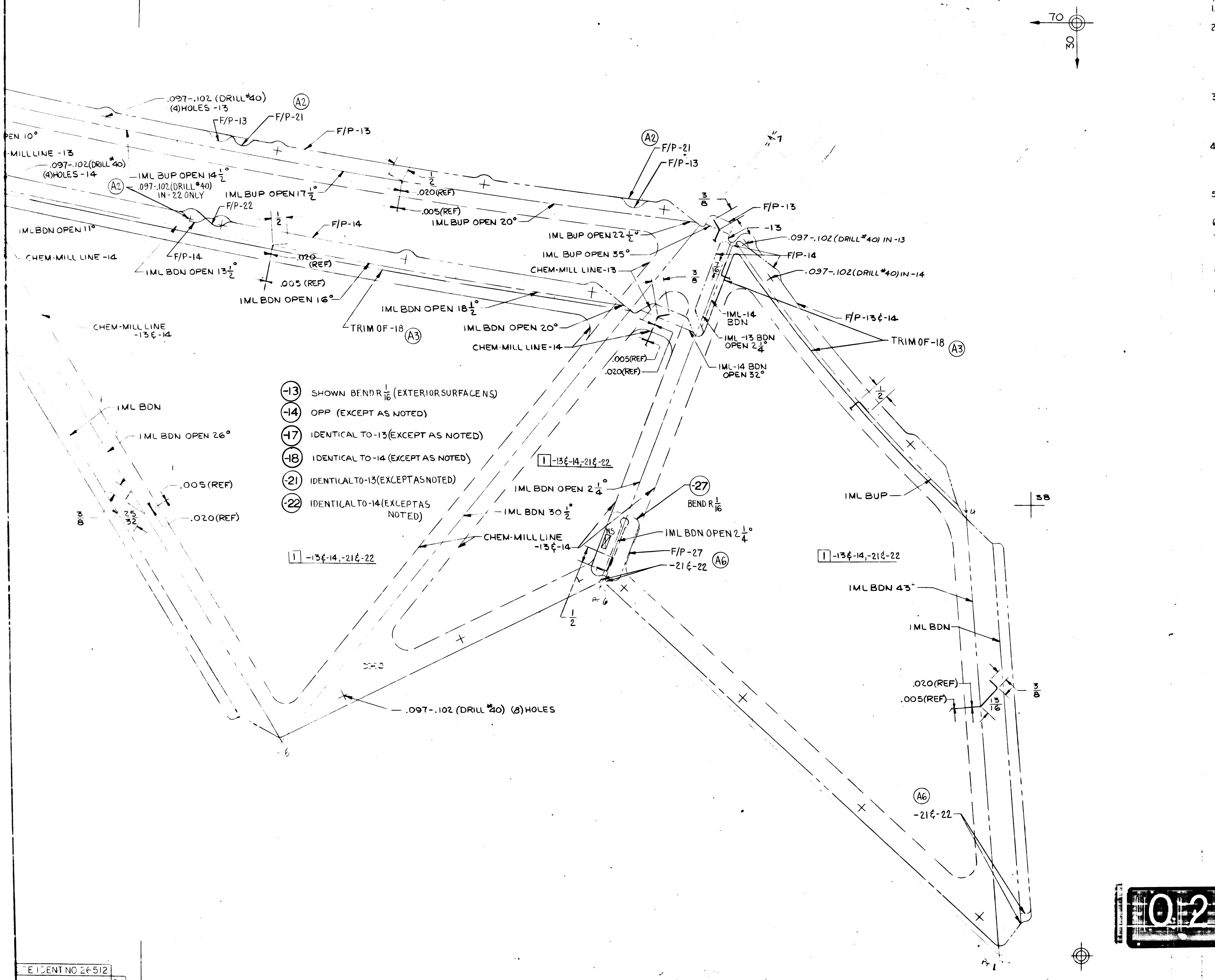
NAS 9-1100


F/P-15
5/16
(A1)
F/P-11
F/P-12
F/P-11
IML-11 BDN 41°
5/16
F/P-12
5/8
IML -12 BDN 45°
TRIM OF -16 (A3)
.020 (REF)
CHEM-MILL LINE -11
CHEM-MILL LINE -12
F/P-11
IML-12 BDN (90°)
(A2) F/P -19 & -20
F/P -11 & -19
IML BUP OPEN 1°
.097-.102 (DRILL #40) IN - 11 ONLY
CHEM-MILL LINE-11
CHEM-MILL LINE-12
F/P-12 & -20
F/P -12 (A5)
IML BUP OPEN 2°
1/2
.020 (REF)
.005 (REF)
.020 (REF)
.005 (REF)
IML BUP 30 1/2°
IML BUP OPEN 4°
TRIM OF -16 (A3)
.097-.102 (DRILL #40) (3 HOLES) IN-11
CHEM-MILL LINE -11 & -12
.097-.102 (DRILL #40) (3 HOLES) IN -12
1 -11 & -12, -19 & -20
(2)
IML BDN OPEN 12 1/2°
IML BDN OPEN 12°
(-11) SHOWN BEND R 1/16 (EXTERIOR SURFACE NS)
(-12) OPP (EXCEPT AS NOTED)
(-15) IDENTICAL TO -11 (EXCEPT AS NOTED)
(-16) IDENTICAL TO -12 (EXCEPT AS NOTED)
(-19) IDENTICAL TO -11 (EXCEPT AS NOTED)
(-20) IDENTICAL TO -12 (EXCEPT AS NOTED)
1 -11 & -12, -19 & -20
1 -11 & -12, -19 & -20
31
CHEM-MILL LINE -11 & -12
5/8
(-23) (SHOWN)
(-24) (OPP) BEND R 1/16
(A6)
F/P -23
IML-23 BDN OPEN 12 1/2°
-19 & -20
(-25) (SHOWN)
(-26) (OPP) BEND R 1/16
(A6)
IML-25 BDN OPEN 12°
NS
F/P -25
.097-.102 (DRILL #40) (12 HOLES) IN -11 & -12
-19 & -20
1/2
5°
F/P -13
F/P -14
IML BUP OPEN 10°
CHEM-MILL LINE -13
.097-.102 (DRILL #40) (4) HOLES -13
F/P -13
.097-.102 (DRILL #40) (4) HOLES -14
IML BUP OPEN 14 1/2°
(A2) .097-.102 (DRILL #40) IN-22 ONLY
IML BU
F/P-22
IML BDN OPEN 11°
CHEM-MILL LINE -14
F/P-14
IML BDN OPEN 13 1/2°
IM
CHEM-MILL LINE -13 & -14
IML BDN
IML BDN OPEN 26°
.005 (REF)
3/8
25/32
.020 (REF)

01/02 NAS 9-1100

CODE IDENT NO 26512
LDW280-10946 SH 3

NF & TRIM



.097-.102 (DRILL #40)
(4)HOLES -13
A2
F/P-13
F/P-21
F/P-13
PEN 10°
-MILL LINE -13
.097-.102(DRILL #40)
(4)HOLES -14
IML BUP OPEN 14 1/2°
A2
.097-.102(DRILL #40)
IN -22 ONLY
IML BUP OPEN 17 1/2°
F/P-22
1/2
.020(REF)
.005(REF)
IML BUP OPEN 20°
IML BDN OPEN 11°
F/P-14
1/2
CHEM-MILL LINE -14
F/P-14
.020
(REF)
IML BDN OPEN 13 1/2°
.005 (REF)
IML BDN OPEN 16°
IML BDN OPEN 18 1/2°
TRIM OF -18
A3
CHEM-MILL LINE
-13 & -14
A2
F/P-21
F/P-13
3/8
F/P-13
-13
.097-.102 (DRILL #40) IN -13
IML BUP OPEN 22 1/2°
IML BUP OPEN 35°
F/P-14
CHEM-MILL LINE-13
3/8
7/16
.097-.102 (DRILL #40) IN -14
IML BDN OPEN 20°
CHEM-MILL LINE-14
-IML-14
BDN
IML -13 BDN
OPEN 2 1/4°
F/P-13 & -14
.005(REF)
.020(REF)
IML-14 BDN
OPEN 32°
TRIM OF -18
A3
70
30
IML BDN
IML BDN OPEN 26°
.005(REF)
3/8
25/32
.020(REF)
-13 SHOWN BEND R 1/16 (EXTERIOR SURFACE NS)
-14 OPP (EXCEPT AS NOTED)
-17 IDENTICAL TO -13 (EXCEPT AS NOTED)
-18 IDENTICAL TO -14 (EXCEPT AS NOTED)
-21 IDENTICAL TO -13 (EXCEPT AS NOTED)
-22 IDENTICAL TO -14 (EXCEPT AS NOTED)
1 -13 & -14, -21 & -22
IML BDN OPEN 2 1/4°
IML BDN 30 1/2°
-27
BEND R 1/16
CHEM-MILL LINE
-13 & -14
NS
IML BDN OPEN 2 1/4°
F/P-27
-21 & -22
A6
1 -13 & -14, -21 & -22
1/2
.097-.102 (DRILL #40) (8) HOLES
IML BUP
38
1 -13 & -14, -21 & -22
IML BDN 43°
IML BDN
.020(REF)
.005(REF)
3/8
13/16
A6
-21 & -22

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. MAKE LDW280-10946-11 THRU -27 FROM 2024-T3 ALCLAD BOTH SIDES (SKIN QUALITY). FINISH ALUMALITE 200/R1/EB10 WHICH MAY BE PURCHASED FROM ALUMINUM CO. OF AMERICA (CODE IDENT 01634).
3. THE SURFACE DESIGNATED "EXTERIOR" SHALL BE PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROLL PRODUCTS INC. FARMINGDALE.
4. THE INTERIOR SURFACE OF LDW280-10946-11,-12,-13,-14,-19,-20-21 & -22 TO BE CHEM-MILLED IN ACCORDANCE WITH (LSP14-26100) FINISH ENTIRE SURFACE #76 (LSP14-9010).
5. MATERIAL, FINISHES, HANDLING AND PERMISSIBLE DEVIATIONS PER LPC 280-16
6. FABRICATE PER LPC280-19. DIRECTION OF LAPS OPTIONAL
7. MAKE FROM ONE LAYER OF INCONEL 600 FOIL PER AMS5440. PAINT EXTERIOR SURFACE WITH H.E. BLACK PYROMARK PER LPC280-5
8. MAKE FROM ONE LAYER OF .0005 NICKEL FOIL COMMERCIALLY PURE INCO 200 OR EQUIVALENT
9. MAKE FROM INCONEL KNIT WIRE CLOTH (MESH) MADE OF KNIT PATTERN SQUARE TYPE WIRE CLOTH SLEEVING 5 TO 7 SQUARES PER LINEAR INCH WIRE INCONEL 600 (.0035-.0040 DIA. ROUND) MAY BE PURCHASED FROM: MONTGOMERY METAL FABRIC CO. 59 CANAL ST., WINDSOR LOCKS, CONN CODE IDENT NO. 94725)
10. MAKE FROM .004 AL ALY, 5056-H191 QQ-A-430. TO BE PREFINISHED PER LEI 280-015. SURFACE DESIGNATED EXTERIOR TO BE PROTECTED WITH STRIPPABLE VINYL COATING NO. 796. PURCHASE FROM CARROLL PRODUCTS INC., FARMINDALE N.Y.
11. MAKE FROM .012 AL ALY 2024-T3 ALCLAD QQ-A-250/5. FINISH - CHROMIC ACID ANODIZE PER LDW280-11367
12. ALL RIVETS TO BE SQUEEZED

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	✓
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓
INSTALL RIVETS IN ACCORDANCE WITH LSP14-15302	✓

DWG SIZE 34 X 88

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 90) - 22.5 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) - 5.6 SQ. FT.

PRINT TRIM LINE

LDW280-10946-11,-12,-13,-14,-19,-20,-21 & -22

CHEM-MILL LINE TOLERANCE:
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	± DEPTH OF CUT
1	.005 +.003 -.001	.015(REF)

LDW280-10946 A

02/02

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

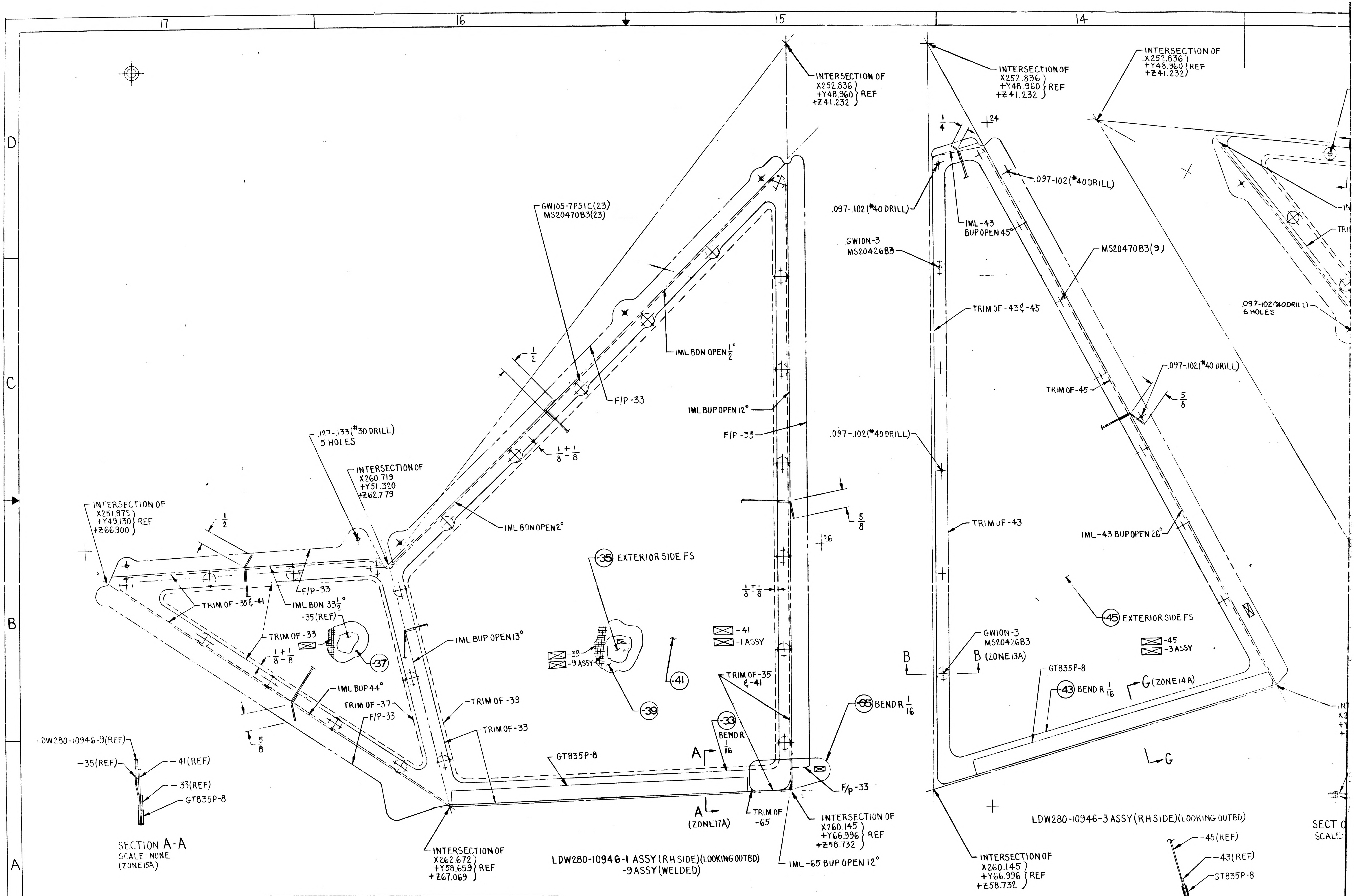
MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	J	26512	LDW280-10946	A
	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

TE IDENT NO 26512
DW280-10946 SH 3

K2

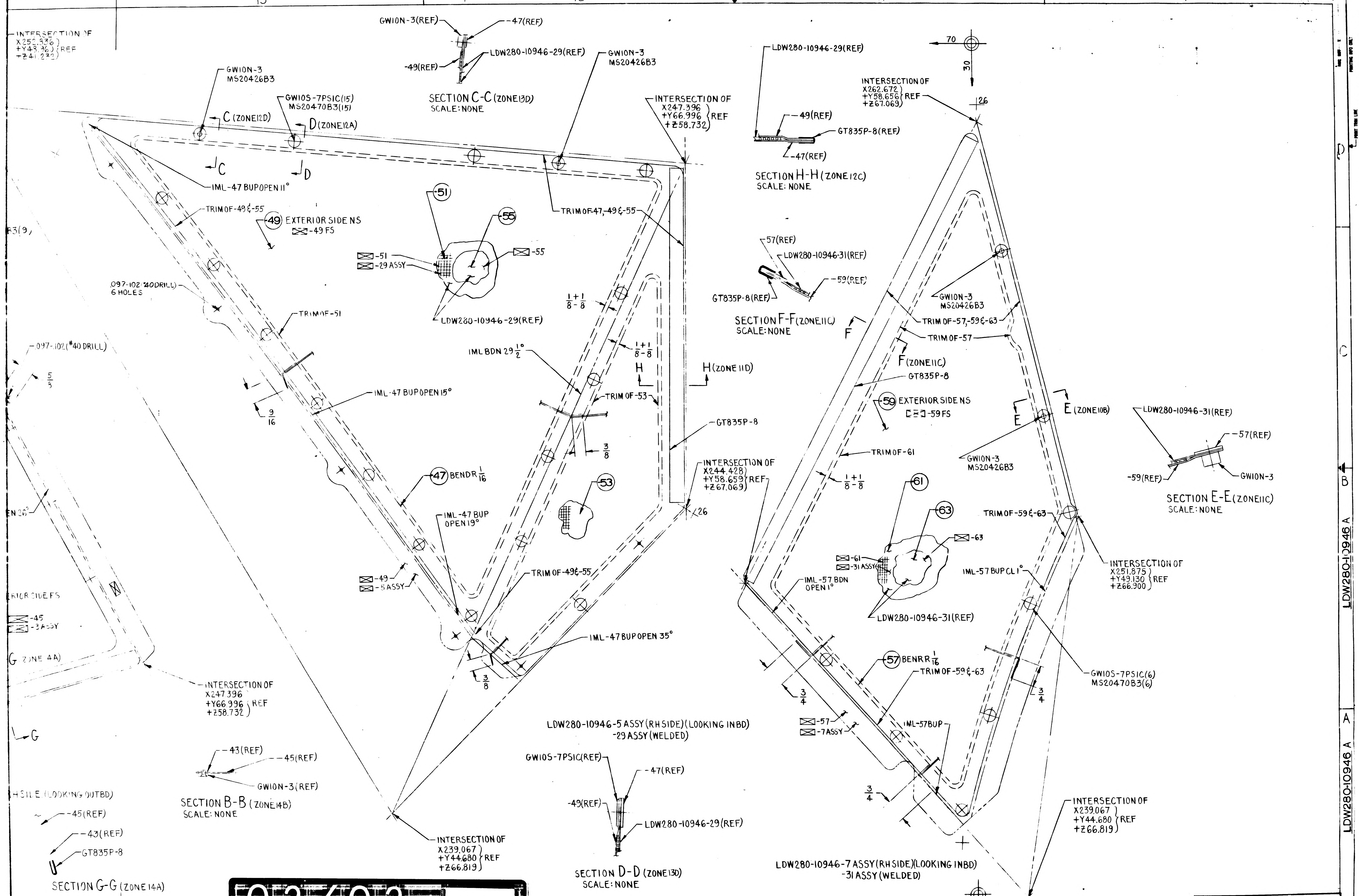
LDW280-10946
SHE 4


17
16
15
14
D
C
B
A
INTERSECTION OF X252.836 +Y48.960 +Z41.232 REF
INTERSECTION OF X252.836 +Y48.960 +Z41.232 REF
INTERSECTION OF X252.836 +Y48.960 +Z41.232 REF
GW105-7P51C(23)
MS20470B3(23)
IML BDN OPEN 1/2°
F/P-33
IML BUP OPEN 12°
F/P-33
1/2
1/8 + 1/8
.127-.133(#30 DRILL) 5 HOLES
INTERSECTION OF X260.719 +Y51.320 +Z62.779
INTERSECTION OF X251.875 +Y49.130 +Z66.900 REF
IML BDN OPEN 2°
1/2
F/P-33
TRIM OF -35 & -41
IML BDN 33 1/2°
-35(REF)
TRIM OF -33
1/8 + 1/8
37
IML BUP OPEN 13°
IML BUP 44°
TRIM OF -37
F/P-33
TRIM OF -39
TRIM OF -33
5/8
35 EXTERIOR SIDE FS
-39
-9 ASSY
39
41
-41
-1 ASSY
TRIM OF -35 & -41
33 BEND R 1/16
65 BEND R 1/16
F/P-33
GT835P-8
5/8
1/8 + 1/8
+26
A
A
(ZONE 17A)
TRIM OF -65
INTERSECTION OF X260.145 +Y66.996 +Z58.732 REF
IML -65 BUP OPEN 12°
INTERSECTION OF X262.672 +Y58.659 +Z67.069 REF
LDW280-10946-1 ASSY (RH SIDE)(LOOKING OUTBD)
-9 ASSY (WELDED)
LDW280-10946-9(REF)
-35(REF)
41(REF)
33(REF)
GT835P-8
SECTION A-A
SCALE NONE
(ZONE 15A)
1/4
+24
.097-.102(#40 DRILL)
.097-.102(#40 DRILL)
IML-43 BUP OPEN 45°
GW10N-3
MS20426B3
MS20470B3(9)
TRIM OF -43 & -45
TRIM OF -45
.097-.102(#40 DRILL)
5/8
.097-.102(#40 DRILL)
TRIM OF -43
IML-43 BUP OPEN 26°
45 EXTERIOR SIDE FS
-45
-3 ASSY
B
B (ZONE 13A)
GW10N-3
MS20426B3
GT835P-8
43 BEND R 1/16
G (ZONE 14A)
G
.097-.102(#40 DRILL) 6 HOLES
INTERSECTION OF X260.145 +Y66.996 +Z58.732 REF
LDW280-10946-3 ASSY (RH SIDE)(LOOKING OUTBD)
-45(REF)
-43(REF)
GT835P-8
SECTION G-G (ZONE 14A)
SECT
SCALE

01/02 NAS 9-1100

CODE IDENT NO	DWG NO	SHEET
26512	LDW280-10946	4

FRAME 1 FRAME 2


13
12
11
10
GW10N-3(REF)
-47(REF)
-49(REF)
LDW280-10946-29(REF)
SECTION C-C (ZONE13D)
SCALE: NONE
INTERSECTION OF
X255.536
+Y43.96
+Z41.232
REF
GW10N-3
MS20426B3
GW10S-7PSIC(15)
MS20470B3(15)
C (ZONE12D)
D (ZONE12A)
C
D
GW10N-3
MS20426B3
INTERSECTION OF
X247.396
+Y66.996
+Z58.732
REF
IML-47 BUP OPEN 11°
TRIM OF-49 & -55
49 EXTERIOR SIDE NS
-49 FS
TRIM OF-47,-49 & -55
51
55
-51
-29 ASSY
-55
LDW280-10946-29(REF)
.097-.102 (#40 DRILL)
6 HOLES
TRIM OF-51
.097-.102 (#40 DRILL)
5/5
9/16
IML-47 BUP OPEN 15°
IML BDN 29 1/2°
1/8 + 1/8
1/8 + 1/8
H
H (ZONE 11D)
TRIM OF-53
3/8
GT835P-8
53
47 BEND R 1/16
IML-47 BUP OPEN 19°
INTERSECTION OF
X244.428
+Y58.659
+Z67.069
REF
26
-49
-5 ASSY
TRIM OF-49 & -55
IML-47 BUP OPEN 35°
3/8
EN 20°
ERIOR SIDE FS
-45
-3 ASSY
G ZONE 4A)
G
INTERSECTION OF
X247.396
+Y66.996
+Z58.732
REF
-43(REF)
-45(REF)
GW10N-3(REF)
SECTION B-B (ZONE14B)
SCALE: NONE
H SIDE (LOOKING OUTBD)
-45(REF)
-43(REF)
GT835P-8
SECTION G-G (ZONE 14A)
INTERSECTION OF
X239.067
+Y44.680
+Z66.819
REF
LDW280-10946-5 ASSY (RH SIDE) (LOOKING INBD)
-29 ASSY (WELDED)
GW10S-7PSIC(REF)
-47(REF)
-49(REF)
LDW280-10946-29(REF)
SECTION D-D (ZONE13D)
SCALE: NONE
LDW280-10946-29(REF)
-49(REF)
GT835P-8(REF)
-47(REF)
SECTION H-H (ZONE12C)
SCALE: NONE
70
30
INTERSECTION OF
X262.672
+Y58.656
+Z67.069
REF
26
-57(REF)
LDW280-10946-31(REF)
-59(REF)
GT835P-8(REF)
SECTION F-F (ZONE11C)
SCALE: NONE
F
F (ZONE11C)
GW10N-3
MS20426B3
TRIM OF-57,-59 & -63
TRIM OF-57
GT835P-8
59 EXTERIOR SIDE NS
-59 FS
E
E (ZONE10B)
TRIM OF-61
GW10N-3
MS20426B3
1/8 + 1/8
61
63
-63
TRIM OF-59 & -63
-61
-31 ASSY
IML-57 BDN OPEN 1°
IML-57 BUP CL 1°
LDW280-10946-31(REF)
INTERSECTION OF
X251.875
+Y49.130
+Z66.900
REF
LDW280-10946-31(REF)
-57(REF)
-59(REF)
GW10N-3
SECTION E-E (ZONE11C)
SCALE: NONE
3/4
57 BEND R 1/16
TRIM OF-59 & -63
GW10S-7PSIC(6)
MS20470B3(6)
3/4
-57
-7 ASSY
IML-57 BUP
3/4
INTERSECTION OF
X239.067
+Y44.680
+Z66.819
REF
LDW280-10946-7 ASSY (RH SIDE) (LOOKING INBD)
-31 ASSY (WELDED)
D
C
B
A
LDW280-10946 A
LDW280-10946 A

02/02

NAS 9-1100

LDW280-10946 SHEET 4

FRAME 1 FRAME 2

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I. NEW YORK

SIZE	CODE IDENT NO.		
J	26512	LDW280-10946	A
SCALE FULL		SHEET 4 OF	

FOR PHOTO REPRODUCTION

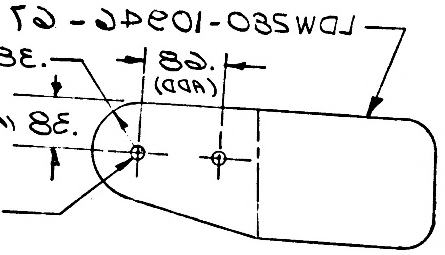
ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. ~~LDW280-10946~~		EO NO. B1
CONTROL INFO NO. LDW280B-5178		

LDW280-10946-67 (SAME AS -65 EXCEPT AS SHOWN)



LFM

IN F/D & B/M, CREATE -67 IDENTICAL TO -65 RESPECTIVELY EXCEPT AS SHOWN.
MATERIAL FOR -67 SHALL BE: AL ALLOY CLAD SHT, QQ-A-250/5, .012 x 1.5 x 3.5, FIN #76 (SEE NOTE #2) (WAS SEE NOTE #8)
IN M/B, LDW280-10946-67, N/A LDW280-28179, LTA-8 (18), 1 REQD/MODULE. REMOVE -65 IN F/D + B/M
IN F/D, NOTE #2: MAKE LDW280-10946-1 THRU -27 & -67 FROM ... ETC.)
(WAS, MAKE LDW280-10946-1 THRU -27 FROM ... ETC.)

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LGD 3119 PKG 2

REASON FOR EO: TO PROVIDE THERMAL SHIELD SUPT, FWD THRUSTER

DESCRIPTION OF EO: IN F/D & B/M, CREATED -67 & REMOVED -65 & REQ'TS, REVISED NOTE #2 TO INCLUDE -67 CLIP.

GAEC EO RELEASE

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 188	LTA-8 (18)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			✓

APPROVED BY								
DATE	8/14/68	8/13/68		8/14/68	8/14/68		8/14/68	8-15-68
A	VDI	SUPPORT THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SHIELD - A/S - CABIN - RCS SHIELD - FWD	LDW280-10946	B1

ISSUED BY C. DE ANGELIS 8/14/68 SECTION VEH. DES. INT. GROUP NO. 335 PL 19

081568

NAS 9-1100

01

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
A	1	1.00, 2.00, 3.00, 1.10						EO-A1	INITIAL DWG RELEASE, PARTS MADE PER E.O.	LTA-8 LEM-1 & -2	NOT	REQ'D	V. SIBILLA 9-1-66		
	2	1.10 & 3.00						EO-A2 Ⓡ	ADDED (2) CUTOUTS IN -13 & NOTE #6, REVISED TRIM OF -11 FLANGE Ⓐ		✓				
B	1	1.00, 1.10						EO-B1	IN M/B OF -11, ADDED (4) REQD ON LDW280-28872 IN M/B OF -13, ADDED (2) REQD ON LDW280-28872	LEM-1, 2, 3 LTA-8	NOT	REQD	J. PAPILE 2-15-67		
	2	1.00, 1.10, 2.00, 3.00	3C					EO-B2	REMOVED -17, -18 ADDED -21, -22	LEM-1, 2 LTA-8		-17, -18			
	3	1.00, 1.10, 2.00, 3.00	5A					EO-B3	REMOVED -13 ADDED -23 & -25	LEM-1 THRU -15 LTA-8		-13			
	4	1.00, 1.10, 2.00, 3.00	7B 3A 3C					EO-B4	DELEATED -1, -11, -19 & MS 20470 B3(4). ADDED -21, REVISED CUTOUT TRIM OF -15, -16, -17, -18	LEM-1, -2, -3 LTA-8	✓	-1, -11 -19			
	5	1.00, 1.10, 2.00, 3.00	3C 7B					EO-B5	REF EO-B4, CREATE -27 WAS -21. REVISE CUTOUT TRIM OF -21 & -22 WAS -17-18	LEM-1 THRU -15 LTA-8	NOT	REQD			
	6	1.01, 1.10	3A 3C 7B					LEO280-408	FOR -15, -16, -21, -22, -27 ADDED LEM-3 THRU LEM-15 EFFECTIVITIES	LEM-3 THRU LEM-15	NOT	REQD			
	7	1.00, 1.10, 2.00, 3.00	3C					LEO280-431	ON INCORPORATION OF EO B2 -29, -30 WAS -21, -22	LTA-8 LEM-1 & 2	NOT	REQD			
	8	1.00, 1.10, 2.00, 3.00	5B					EO-B8	IN FLD, B/M & MOD BLK, ADDED -24	LEM-1, 2, -3 LTA-8		-23			
	9	1.00, 1.10, 1.01, 2.00, 3.00	7B					EO-B9	IN FLD B/M & MOD BLK, ADDED -28	LEM-1, 2, -3 LTA-8		-27			
	10	3.00	5B					EO-B10	ADDED EO TO RECORD BLOCK FOR LTA-8 ADDED (2) CUTOUTS IN LDW280-10947-24 (NOT APPLICABLE)	LEM-1, -2, -3, LTA-8	✓				
	11								REF EO-B5: EFF LTA-8, LEM-1 THRU -15 SHOULD BE LEM-1, -2, -3 & LTA-8 ADDED SH 1.01	LEM-1, -2, -3 LTA-8	NOT	REQD	JG	3-8-67	3-11-67
	12	1.00							REF EO B8 DESCRIPTION OF CHG SHOULD INCLUDE FOR -23 1 REQD WAS 2 REQD	LTA-8 LEM-1 LEM-2 LEM-3		-23			
	13	1.01						Ⓡ	REF EO B9 DESCRIPTION OF CHG SHOULD INCLUDE FOR -27 ON N/A LDW280-28872 & LDW280-28496 2 REQD WAS 4 REQD			-27			

CHG APPROVED

LTR	GROUP LDR	VEH. DES. INT.	STRUCTURES	STRUCTURES	WEIGHTS
A	—				
B	—	3/6/67			

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10947	B
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10947-28		FRAME	AL ALLOY SH	QQ-A-250/5	2024T3 CLAD	.010 × 6 × 8	NONE	SEE NOTE 4	7B
		24	E	SKIN				.010×11¾×12⅛			5B
		-25		SKIN				.010×11¾×12⅛			5A
		-30		CHANNEL				.010×3⅛×12⅞			3C
		-29						.010×3⅛×12⅞			3C
		-16						.010×7⅞×12¾			3A
		-15		CHANNEL				.010×7⅞×12¾			3A
		-23		SKIN				.010×11¾×12⅛			5B
		LDW280-10947-27	F	FRAME	AL ALLOY SH	QQ-A-250/5	2024-T3 CLAD	.010 × 6 × 8	NONE	SEE NOTE 4	7B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						76	ALODINE	LSP-14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10947	B

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

LDW280-10947 C

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-54872	PR-1	1
PART NO. LDW280-10947-25		GAEC SCH NO. 30	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28872	LTA-8(18)	1
LEM	LDW280-28872	LEM-1(31)	1
LEM	LDW280-28496	LTA-8(18)	1
LEM	LSK280-11127	TEST	1
LEM	LDW280-28496	LEM-1(31)	1
PART NO. LDW280-10947-23		GAEC SCH NO. 30	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28872	LTA-8 (18)	1
LEM	LDW280-28872	LEM-1(31)	1
LEM	LDW280-28496	LTA-8(18)	1
LEM	LDW280-28496	LEM-1 (31)	1
PART NO. LDW280-10947-24			
LEM	LDW280-28496	LEM-1(31)	1EA.
PART NO. LDW280-10947-15, -16, -29, -30		GAEC SCH NO. 30	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10		1.01					
REV	C	B		C					
SHEET	2.00	1.11							
REV	B	C							
SHEET	3.00								
REV	C								

LAST SECT LTR USED	C	GRUMMAN REL INFO B	
LAST DASH NO. USED	-30	PRIM NO. 215	UE(001) ME-1 C 4/4/7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS-9-1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	V. SIBILLA 9/1/66		
LAYOUT BY	F. CURASI 9-8-66		
CHECKED BY	R. SMITH 9.6.66		
GROUPLEADER	9/8/66		
VEHDESINT	W.R. BISCHOFF		
STRUCTURES	9/4	PROJ ENGR	R M. Carbee 9-13
STRUCTURES	9/9	REL GROUP	10-8-66
WEIGHTS	9/28/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SHIELD ASSY
ASCENT STAGE CABIN & MID SECTION
RCS CLUSTER SHIELD

SIZE	CODE IDENT NO.		
B	26512	LDW280-10947	C
SCALE	NONE	SHEET 1.00 OF 6	

ENG 77.1 12-65

01

NAS 9-1100

LDW280-10947 C

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28872	LTA-8(18)	2
LEM	LDW280-28872	LEM-1(31)	2
LEM	LDW280-28496	LTA-8(18)	2
LEM	LDW280-28496	LEM-1(31)	2
LDW280-10947-28			
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28872	LTA-8(18)	2
LEM	LSK280-11127	TEST	1
LEM	LDW280-28872	LEM-1(31)	2
LEM	LDW280-28496	LTA-8(18)	2
LEM	LDW280-54872	PR-1	2
LEM	LDW280-28496	LEM-1(31)	2
PART NO. LDW 280-10947-27		GAEC SCH NO. 30	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH
SHEET
REV
SHEET
REV
SHEET
REV
LAST SECT LTR USED
LAST DASH NO. USED
GRUMMAN REL INFO
PRIM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO.
LINE ITEM
DOCUMENTATION TYPE
DRAWN BY
LAYOUT BY
CHECKED BY
PROJ ENGR
REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SHIELD ASSY
ASCENT STAGE CABIN & MID SECTION
RCS CLUSTER SHIELD

SIZE B
CODE IDENT NO. 26512
LDW280-10947 C
SCALE NONE
SHEET 1.01

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
C	1	1.11,3.00, 1.06	1C						ADDED SHEET 1.11 INC LEO 280-502.	LTA-8,LM-1 THRU LM-15			D. POWER 3-31-69		
	2	1.11,3.00	3A 3C						INC. EO C2.	NOT REQD					
	3	1.11,3.00	5A 4B						INC. EO C3.	NOT REQD					
	4	1.00,1.01 1.11							INC. LEO 280-729.	PR-1					
	5	1.00,1.01 1.11							INC. LEO 280-752.	TEST					
	6	1.00,1.01 1.11		R				②	INC. LEO 280-797.	LM-2 THRU LM-15		H.D.	E.C.G.		

CHG APPROVED	LTR	GROUP LDR	V.D.I.	STRUCT
	C			

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW 280-10947	C
SCALE NONE		SHEET 1.11	Ⓒ

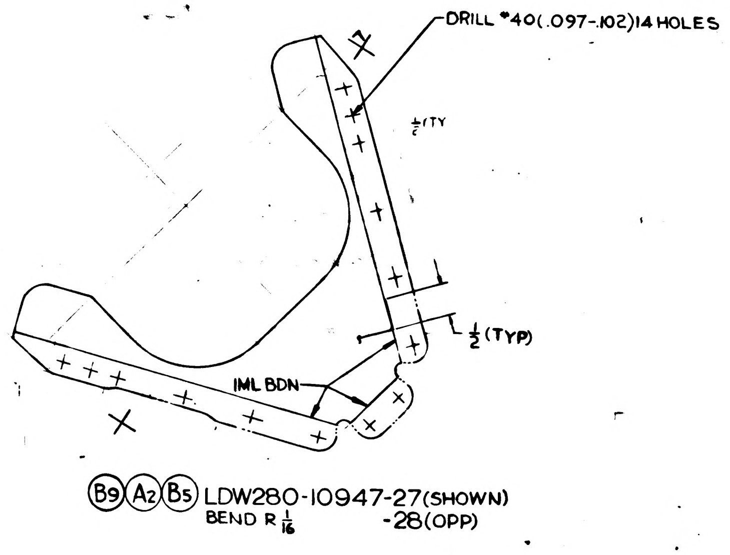
ENG 77.16 3-66

01

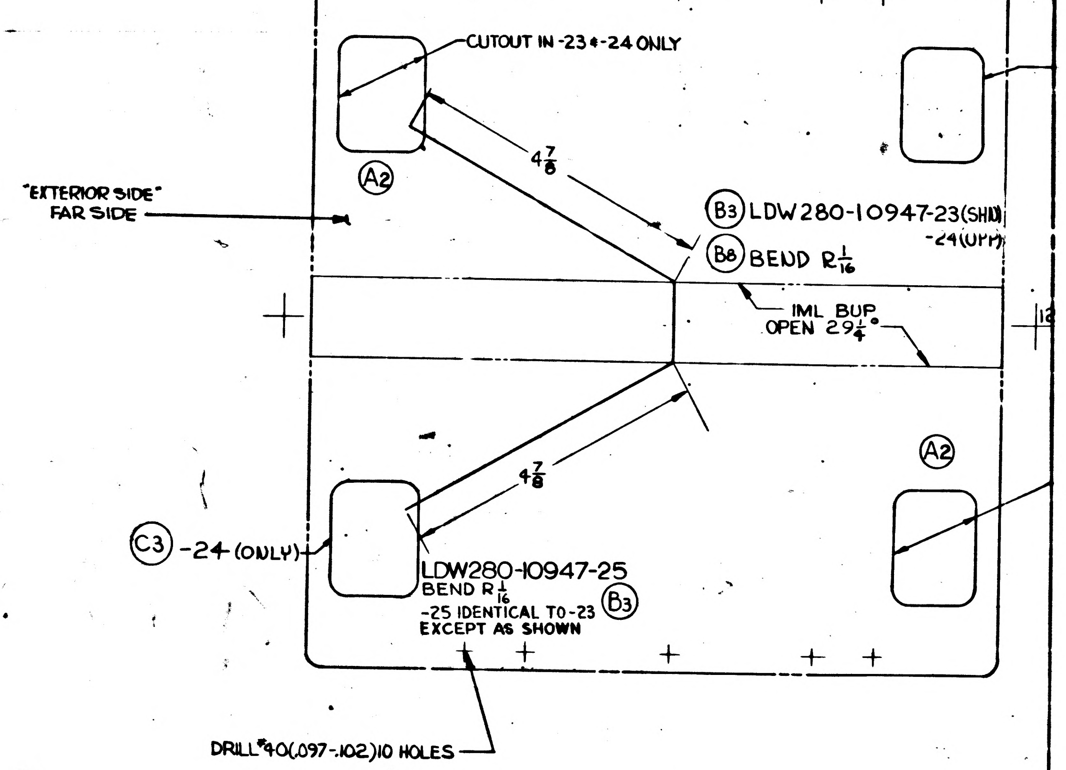
NAS 9-1100

8 7 6 5 4

C


DRILL #40(.097-.102)14 HOLES
1/2 (TYP)
IML BDN
B9 A2 B5 LDW280-10947-27(SHOWN)
BEND R 1/16
-28(OPP)

B


CUTOUT IN -23 & -24 ONLY
A2
4 7/8
"EXTERIOR SIDE" FAR SIDE
B3 LDW280-10947-23(SHN)
-24(OPP)
B8 BEND R 1/16
IML BUP
OPEN 29 1/4°
A2
4 7/8
C3 -24 (ONLY)
LDW280-10947-25
BEND R 1/16
-25 IDENTICAL TO -23
EXCEPT AS SHOWN
B3
DRILL #40(.097-.102)10 HOLES

A

01/02 NAS 9-1100

CODE IDENT NO. 26512
LDW280-10947
SH 3

8 7 6 5 4

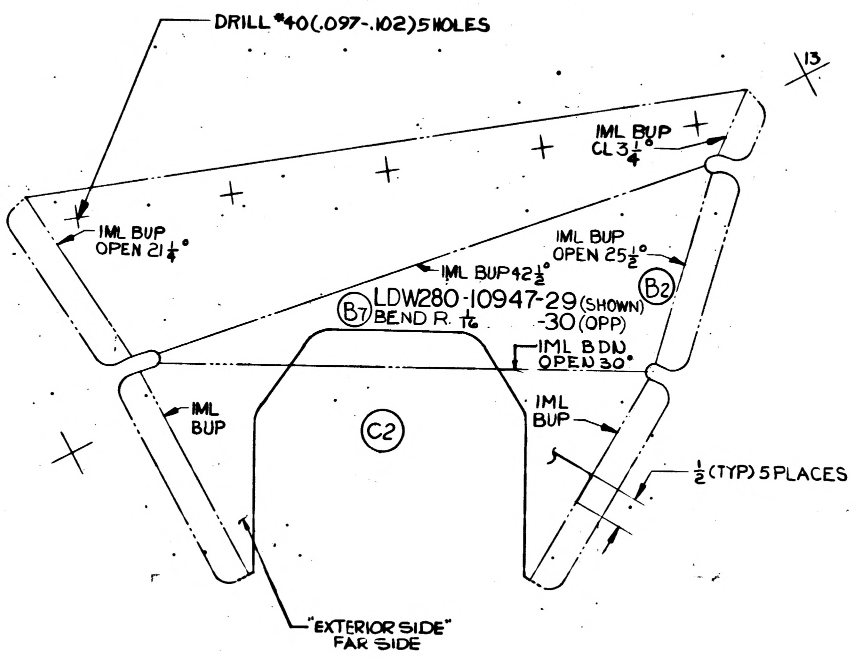
NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. MAKE LDW280-10947-11,13,-15,-16,-17, -18 & -19 FROM .020 2024-T3 ALCLAD, BOTH SIDES (SKIN QUALITY) FINISH ALUMALITE 200/R1/EB10 WHICH MAY BE PURCHASED FROM ALUMINUM CO. OF AMERICA (CODE IDENT. 01634)
3. THE SURFACE DESIGNATED "EXTERIOR" SHALL BE PROTECTED WITH STRIPPABLE VINYL COATING #796, PURCHASED FROM CARROLL PRODUCTS INC. FARMINGDALE L.I. N.Y.
4. REMOVE FINISH ALUMALITE 200/R1 /EB10 (ANODIZE) FROM INTERIOR SURFACE. REFINISH WITH #76 AFTER CHEM-MILL.
5. THE INTERIOR SURFACE TO BE CHEM-MILLED AS SHOWN (.010±.002) IN ACCORDANCE WITH LSP-4-26100.
6. LDW280-10947-13 MAY BE HOT FORMED PER LSP-14-5300A
7. MATERIAL, FINISHES HANDLING AND PERMISSIBLE DEVIATIONS PER LPC-280-16.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS 1 1/2 FASTENER DIA. FROM FASTENER ℄	√
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	√
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	√
TOLERANCE ON LOFTED DELINEATIONS IS	

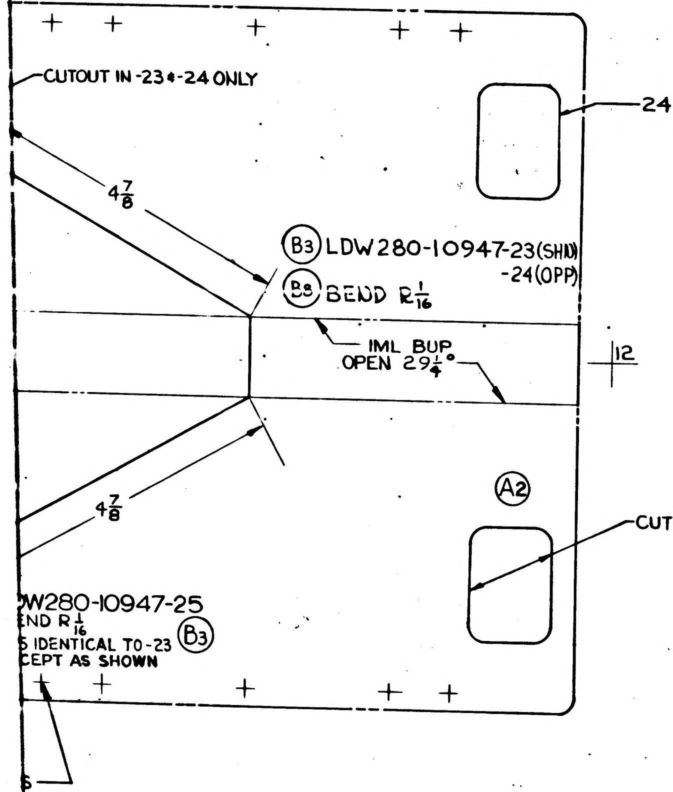
DWG SIZE 34 X 82

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 92) = 23 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = SQ. FT.
PRINT TRIM LINE

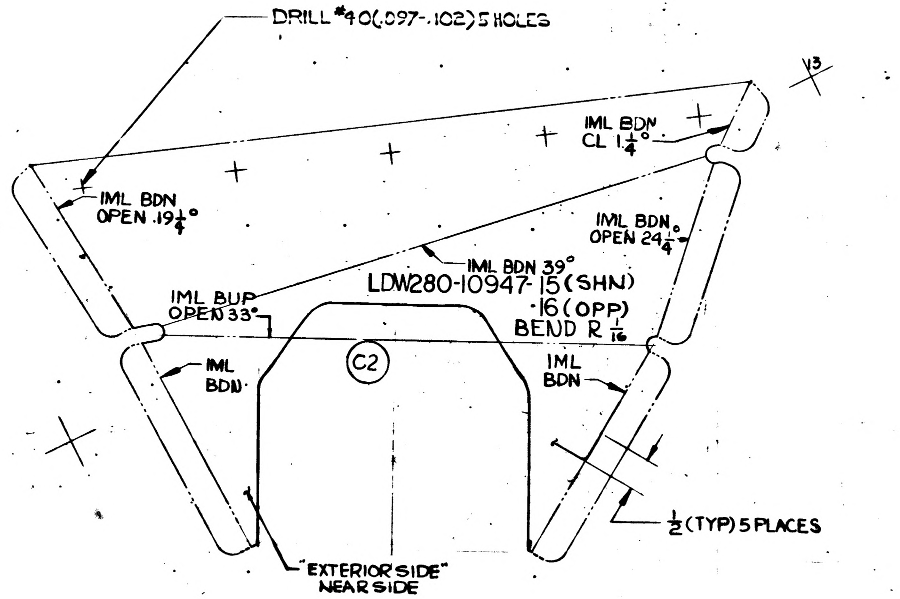


DRILL #40(.097-.102)5 HOLES
13
IML BUP CL 3¼°
IML BUP OPEN 21¼°
IML BUP 42½°
IML BUP OPEN 25½°
B2
B7
LDW280-10947-29 (SHOWN) -30 (OPP)
BEND R 1/16
IML BDN OPEN 30°
IML BUP
IML BUP
C2
½ (TYP) 5 PLACES
"EXTERIOR SIDE" FAR SIDE

70
30



CUTOUT IN -23&-24 ONLY
-24 (ONLY) C3
4⅞
B3 LDW280-10947-23(SHN) -24(OPP)
B8 BEND R 1/16
IML BUP OPEN 29¼°
12
4⅞
A2
CUTOUT IN -23&-24 ONLY
DW280-10947-25
END R 1/16
S IDENTICAL TO -23
CEPT AS SHOWN
B3



DRILL #40(.097-.102)5 HOLES
13
IML BDN CL 1¼°
IML BDN OPEN 19¼°
IML BDN 39°
IML BDN OPEN 24¼°
LDW280-10947-15 (SHN) -16 (OPP)
BEND R 1/16
IML BUP OPEN 33°
IML BDN
C2
IML BDN
½ (TYP) 5 PLACES
"EXTERIOR SIDE" NEAR SIDE

02/02

NAS 9-1100

LDW280-10947C

LDW280-10947C

CODE IDENT NO. 26512	SH
LDW280-10947	3

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE J	CODE IDENT NO. 26512	LDW280-10947	C
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

THIS IS AN ORIGINAL DRAWING

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10948-12	E	RING	AL ALLOY SH	QQ-A-355	2024	.040 × 17 × 30	T42	88	
								LDW280-10948-11	E	RING	AL ALLOY SH	QQ-A-355	2024	.040 × 17 × 30	T42	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T42	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP 14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10948	A
SCALE NONE		SHEET 2.00	

ENG 77.2 7-65

01

NAS 9-1100

LDW280-10948 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LPM 26	LDW280-28.75	[illegible]	1 EA
LM	LDW280-28.75	[illegible]	1 EA
LM	LDW280-28.75	LM-5 45	1 EA
▲	▲	LM-4 44	1 EA
		LM-3 43	1 EA
		LM-2 42	1 EA
		LM-1 41	1 EA
		LM-0 40	1 EA
		LM-9 39	1 EA
		LM-8 38	1 EA
		LM-7 37	1 EA
		LM-6 36	1 EA
		LM-5 35	1 EA
		LM-4 34	1 EA
	▼	LM-3 33	1 EA
	LDW280-28.75	LM-2 32	1 EA
▼	LDW280-28.75	[illegible]	1 EA
LM	LDW280-28.75	[illegible]	1 EA

PART NO.	GAEC SCH NO.
LDW280-10948-11 ε-12	30

5

SH REV STATUS FOR DESCRIPTION OF REV SEE SUCC SH

SHEET	1.00	1.10	2.00	3.00
REV	B	B	A	B
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO USED -12

GRUMMAN REF INFO 3

PRIM NO. [illegible]

2 3 [illegible]

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM I

DOCUMENTATION TYPE I

DRAWN BY D. PALMER 429

LAYOUT BY D. LENNARO 429

CHECKED BY [illegible] 2-29-63

GP LEADER [illegible]

DES [illegible]

STRUCTURES [illegible]

STRUCTURES [illegible]

WEIGHTS [illegible]

RELIABILITY

PROJ ENGR [illegible] 5-11

REL GROUP [illegible]

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE L. I. NEW YORK

RING
ASCENT STAGE - CABIN - HATCH - THERMAL

SIZE B

CODE IDENT NO 26512

LDW280-10948 E

SCALE NONE

SHEET 1.00 OF 4

REV B CD2 5-8-63

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DIT SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GAMS APPD
											REWORK	SCRAP			
	1	1.00						EO A1	FOR -11 & -12 ADDED EFF LM-3 THRU LM-15. ADDED SH 1.10	LM-3 THRU LM-15	NOT	REQD	[illegible] 3-16-67		
	2	3.00							ON -11 & -12 ADDED .069-.074 (#50 DRILL) (1) HOLE (31 HOLES WAS 30) ON -12 ADDED .069-.074 (#50 DRILL) (1) HOLE	LTA-8 LM-1 THRU LM-15	-11 -12		HCG		
B	1	3.00					✓	EO B1	ON -11 ELIMINATED 5 HOLES; ON -12 ELIMINATED 7 HOLES	LM-3 THRU LM-15	✓		G. ENGEL 4-19-68		
	2	1.00				✓		LEO280-727 LCD1367, CCA547	ON -11 & -12 ADDED ZERO "G" REQUIREMENTS	ZERO "G" TEST	NOT	REQ'D			
	3	1.00		LFM 126		✓		LCD1021-33	FOR -11 & -12 ADDED END ITEM LFM 126 REQUIREMENTS	LTA-8(8)	NOT	REQ'D			

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

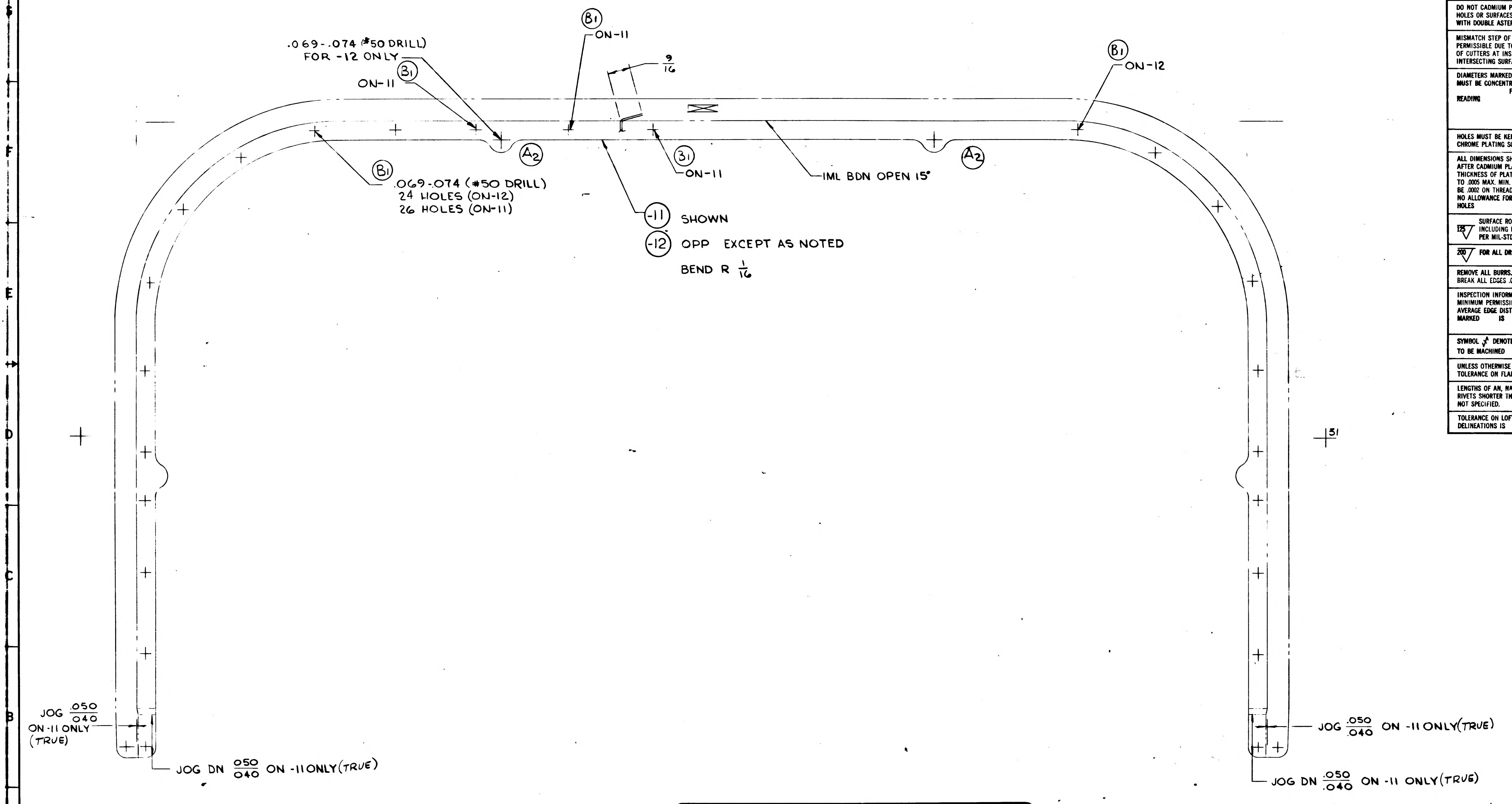
SIZE	CODE IDENT NO.		
B	26512	LDW280-10948	B
SCALE NONE			SHEET 1.10

BIG 77.3 5-66

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.


3C
25
.069-.074 (#50 DRILL)
FOR -12 ONLY
B1 ON-11
B1 ON-11
9/16
B1 ON-12
A2
A2
B1 .069-.074 (#50 DRILL)
24 HOLES (ON-12)
26 HOLES (ON-11)
B1 ON-11
IML BDN OPEN 15°
-11 SHOWN
-12 OPP EXCEPT AS NOTED
BEND R 1/16
JOG .050/.040 ON-11 ONLY (TRUE)
JOG DN .050/.040 ON -11 ONLY (TRUE)
JOG .050/.040 ON -11 ONLY (TRUE)
JOG DN .050/.040 ON -11 ONLY (TRUE)
51

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY~~.	/
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	F	26512	LDW280-10948	B
	SCALE		SHEET 3.00	

FOR PHOTO REPRODUCTION

LDW280-10953 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	SEE NOTE #2	DESIGN VERIF(70)	1EA
↕	SEE NOTE #2	QUAL TEST(70)	1EA
↕	LDW280-23210	LM-6(36)	1EA
↕	↕	LM-5(35)	1EA
↕	↕	LM-4(34)	1EA
↕	↕	LM-3(33)	1EA
LM	LDW280-23210	LTA-3 (13)	1EA
PART NO. LDW280-10953-11,-12,-13,-14		GAEC SCH NO. 31-4	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -14

GRUMMAN REL INFO A

PRIM NO.	LE(001)		
215	MP12		FR 5/3

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.010 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	OGOLIK 4/21/66		
LAYOUT BY	OGOLIK		
CHECKED BY			
GR LEADER	PUSATERI 4/22		
VEH DES INT	BISCHOFF 4/23		
STRUCTURES	BRUCE, WHITMAN 5/3	PROJ ENGR	ALBER 5/4
STRUCTURES	HILDERMAN 5/3	REL GROUP	BOTTI 5/7
WEIGHTS	ROBESCH 5/4		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE-FRONT FACE BEACON
LIGHT

SIZE B
CODE IDENT NO. 26512
LDW280-10953 A
SCALE NONE
SHEET 1.00 OF 3

ENG 77.1 12-65

SUPERSEDES LDW280-10953 NO CHANGE 5-7-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE LAST REV NO CHANGE LOFTED DWG SH I OF 3 WAS I OF I ADDED SH 1.10, 2.00 & 3.00	WAS DIM	MELMED 9-13-66				
A	I							LE0280-179 ②	ADDED QUAL. TEST & DESIGN VERIFICATION AND N/A REF NOTE 2 HR	QUAL TEST VERIF TEST	NCT	REQ	MELMED 9-13-66		

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10953	A
SCALE NONE			SHEET 1.10

01 NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10953-14	E	ANGLE	AL ALY SH	QQ-A-250/12	7075-T6	.032 X 2 3/8 X 3 7/8	NONE	88	
								-13	↕	↕	↕	↕	7075-T6	.032 X 2 3/8 X 3 7/8	NONE	↕	
								-12	↕	↕	↕	↕	7075	.032 X 2 3/8 X 3	T6	↕	
								LDW280-10953-11	E	ANGLE	AL ALY SH	QQ-A-250/12	7075	.032 X 2 3/8 X 3	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030
						T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

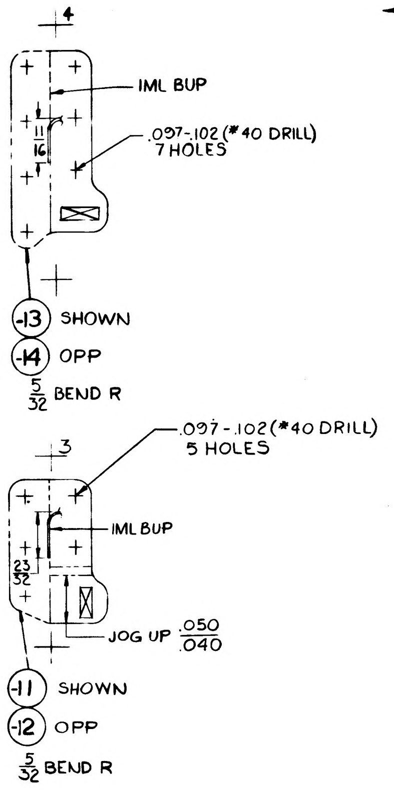
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-10953
A
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. QUALIFICATION TEST AND DESIGN VERIFICATION TEST TO BE PERFORMED AT VENDORS FACILITIES.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK
SIZE C
CODE IDENT NO. 26512
LDW280-10953
A
LEM
MODEL OR END ITEM
SCALE FULL
SHEET 3.00

FOR PHOTO 1 REPRODUCTION K

LDW280-10953

LDW280-10953

NAS 9-1100

23

ENG 32.2 REV 2-65

*

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280
EO NO. 295
CONTROL INFO NO. LDW28C A0657

* TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4 34

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10789	A3	SEE DRAWING
-10790	B1	
H 10792	C1	
-10796	A1	
-10798	B1	
-10800	B2	
H 10801	A1	
H 10802	B1	
H 10804	B1	
-10806	C1	
-10808	A1	
P 10809	B2	
-10811	B2	
-10813	B1	
-10814	B1	
-10815	A4	
-10817	A1	
-10838	B1	
-10846	C1	
-10927	B1	
-10934	A1	
-10953	B1	
-10954	A1	
-10955	A1	
-10961	A3	
P 10966	A4	
-10970	A1	
-10973	A1	
-10974	A1	
-10976	A1	
-10977	A1	
-10979	A1	
LDW280-10980	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL III ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE: C LE 10-8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37), LEM	8(38), LEM-9(39)
LEM		LEM-10(40), LEM-11	(41), LEM-12(42)
LEM		LEM-13(43), LEM-14	(44), LEM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D

APPROVED BY: RP

DATE: 9/23/66

VD — — AW

PROJ ENGRG: RMC 10-6-66

GOVT: AC 10-3-66

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO.: LE0280

EO NO.: 295

ISSUED BY: L. DETURRIS 7-18-66 X 1441 SECTION: VEHICLE DESIGN INT. GROUP NO. 280 PL 35

01

NAS 9-1100

LDW280-10954

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23213	LEM-6(36)	2 EA
	LDW280-23213	LEM-5(35)	2 EA
	LDW280-23213	LEM-4(34)	2 EA
	LDW280-23213	LEM-3(33)	2 EA
	LDW280-28213	LEM-2(32)	2 EA
	LDW280-28213	LEM-1(31)	2 EA
LEM	LDW280-23213	LTA-3(13)	2 EA
PART NO. LDW280-10954-11&-12		GAEC SCH NO. 32-2	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00						
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED

LAST DASH NO. USED -11

GRUMMAN REL^c INFO

PRIM NO. 215 LE(001) MP12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY HERB. SCHWETER 3/19/66

RELIABILITY

LAYOUT BY J. KORYKORA

CHECKED BY 3-21-66

GR LEADER 3/21/66

VEH DES INT 3/21

STRUCTURES 3/21

STRUCTURES Hilderman 3/22

WEIGHTS 3-28

PROJ ENGR 3-28-66

REL GROUP 3-30-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE - MID SECT. RCS
MANIFOLD CONTROL VALVES SUPPORT

SIZE B

CODE IDENT NO. 26512

LDW280-10954

SCALE NONE

SHEET 1.00 OF 3

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10954-12	E	BRACKET	AL ALY SH	QQ-A-283	7075	.032×4⅛×5⅜	T6	88	
								LDW280-10954-11	E	BRACKET	AL ALY SH	QQ-A-283	7075	.032×4⅛×5⅜	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	LSP14-9030
						88	ANODIZE	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10954

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

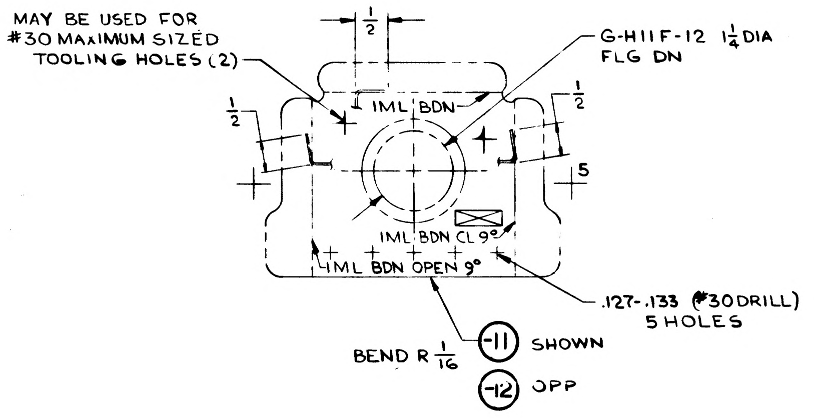
MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED APPLY TO THIS DWG.

RUBBER STAMP PART NO. ✓
IN REGION MARKED ☒

TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32 ✓

NOTES:

1. NO TOOLING HOLES PERMITTED IN PART EXCEPT AS NOTED.
2. ABBREVIATIONS ARE IN ACCORDANCE WITH MIL-STD-12-B EXCEPT AS NOTED:
RCS (REACTION CONTROL SYSTEM)


MAY BE USED FOR #30 MAXIMUM SIZED TOOLING HOLES (2)
1/2
1/2
1/2
G-H11F-12 1 1/4 DIA FLG DN
IML BDN
5
IML BDN CL 9°
IML BDN OPEN 9°
.127-.133 (#30 DRILL) 5 HOLES
BEND R 1/16
-11 SHOWN
-12 OPP

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LEM	C	26512	LDW280-10954
	SCALE FULL		SHEET 3.00

FOR PHOTO REPRODUCTION

K2

LDW280-10954

LDW280-10954

23 *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO LEO230 | EO NO. 295
CONTROL INFO NO. LDW28CA0657

*
TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4 34

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10789	A3	SEE DRAWING
-10790	B1	
H 10792	C1	
-10796	A1	
-10798	B1	
-10800	B2	
H 10801	A1	
H 10802	B1	
H 10804	B1	
-10806	C1	
-10808	A1	
P 10809	B2	
-10811	B2	
-10813	B1	
-10814	B1	
-10815	A4	
-10817	A1	
-10838	B1	
-10846	C1	
-10927	B1	
-10934	A1	
-10953	B1	
-10954	A1	
-10955	A1	
-10961	A3	
P 10966	A4	
-10970	A1	
-10973	A1	
-10974	A1	
-10976	A1	
-10977	A1	
-10979	A1	
LDW280-10980	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ | CL III ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE C: LE 108

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM-9(39)
LEM		LEM-10(40) LEM-11(41)	LEM-12(42)
LEM		LEM-13(43) LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: NOT REQ'D
APPROVED BY: VE — DATE 9/13/66
AW 9.21
PROJ ENGRG: 10-6-66
CONT: AC 10-3-66
PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO: LEO280
EO NO. 295

ISSUED BY L. DETURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO 280 PL 35

ENG 32.1 REV 3-66 *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW280-10954
EO NO. A2
CONTROL INFO NO. LDW280A-3472

ON -11 & -12 REVISE N/A AS SHOWN:

NOW:

2 EA. OF -11 & -12 REQ'D ON LDW280-23213 FOR LM-1(31) & LM-2(32)

WAS:

2 EA OF -11 & -12 REQ'D ON LDW280-28213 FOR LM-1(31) & LM-2(32)

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: TO CORRECT N/A CALLOUT.

DESCRIPTION OF EO: ON -11 & -12 N/A FOR LM-1 & -2 WAS LDW280-28213

GAEC EO RELEASE: C LE 11/22

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-1 (31)	
LM		LM-2 (32)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓		NOT	REQ
REVISE DWG	RECORD EO	REWORK	SCRAP

APPROVED BY				—				
DATE	11/16/66			—	11/17		11/18/66	11/19/66
6	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C
DRAWING TITLE: BRACKET-ASCENT STAGE-MID SECT-RCS MANIFOLD CONT. VALVE SUPT
DRAWING NO.: LDW280-10954
EO NO.: A2

ISSUED BY VALENTINE 11/16/66 x1441 SECTION VDI (PHILLIPS) GROUP NO. 335 PL 35

01 NAS 9-1100

ENG 32.1 REV 3-65

C

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

*

DWG. NO. LDW280-10954
EO NO. A3
CONTROL INFO NO. LDW280A7807

FOR -11 & -12 EFF LM-3(33) THRU LM-15(45) N/A SHOULD BE LDW280-53213 (WAS LDW280-23213); QTY TO REMAIN THE SAME

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 1426 CCA 580	5

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
ADDITION OF (4) RCS INTERCONNECTS REQUIRES NEW INSTL LCR 1426	-11 & -12 N/A WAS LDW280-23213	JL 7-5

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3(33) THRU LM-15(45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY	JaP			FDR	RH			Both.
✓		NOT REQD		DATE	7/1/67			7-1-67	7/1		7/1/67	7-3-67
REVISE DWG	RECORD EO	REWORK	SCRAP		VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	A/S - MID SECT - RCS MANIFOLD BRACKET CONTROL VALVES SUPPORT	LDW280-10954	A3

ISSUED BY G. BARNES / F. DeRESPINIS X1153 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280
EO NO. 832
CONTROL INFO NO. LDW280B-0904

FOR THE FOLLOWING DWGS; FOR DASH No. NOTED ✱
ADD EFF.: LFM-50 & PA-1(47) & NEXT ASSY: LTM280-26968
(✱ USE APPLICABLE DASH No. IN DESCRIPTION OF E.O.)

DRAWING No.	DASH No.	No. REQ'D	CHG. No.
LDW280-10764	-17, -19, -29 -21, -23, -25, -27	2 EA. 1 EA.	C4
-10765	-15, -16, -17, -18 -31, -32, -33, -34	1 EA.	C3
-10766	-19	4 EA.	B4
-10954	-11, -12	1 EA.	A4
-11885	-11, -13, -14 -15, -17, -19	1 EA	A2
-11886	-13, -16, -17, -19 -21, -23, -25	1 EA.	A2
-11396	-11, -13, -14, -17, -18 -19, -23, -27, -31	1 EA.	B1
-11897	-11, -13, -15, -17, -19	1 EA.	A1
-11898	-13, -19, -31, -33, -35 -17	1 EA 4 EA	A5
-11899	-11, -13, -15 -17, -23, -25	1 EA.	A3
-11900	-11, -13, -15 -17, -19, -21	1 EA	A1
-11901	-11, -16, -17, -19 -21, -23, -25	1 EA.	A4
-11902	-11, -13, -15	1 EA.	A1
-11903	-19, -20, -21, -22 -23, -24, -25	1 EA.	A6
	-27	2 EA.	
LDW280-11934	-11, -13, -15, -17 -18, -19, -21, -22	1 EA.	A1

LFM

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD #2019 CCA 667 (5)

REASON FOR EO: UPDATE PA-1(47) TO LM-3(33) CONFIG.

DESCRIPTION OF EO: FOR ✱ ADDED PA-1(47) EFF.

GAEC EO RELEASE: 1/10/68

MODEL	EFFECTIVITY ~~PROCURING ACTIVITY NO~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM #50	PA-1 (47)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK NOT SCRAP REQ

APPROVED BY	VDI.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONF~~
DATE	1/8/68			1-8-68	1-9		1/8/68	1-10-68

PRIORITY: C
DRAWING TITLE: NOTED ABOVE
DRAWING NO.: LEO280
EO NO. 832

1-9
ISSUED BY D. LOZINSKI X7033 SECTION V.D.I. GROUP NO. 335 PL 25

01 NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280H54060	LM 15(45)	1
		THRU	1
LM	LDW280H54060	LM 4 (34)	1
LFM 269	LDW280H54060	LM 3(33)	1
LDW 420-11262	LDW 280H54060	SER# 16	1
LDW 420-11262	LDW-280H54060	SER# 15	1
LDW 420-11262	LDW-280H54060	SER.# 14	1
PART NO. LDW280-10955-13-1		GAEC SCH NO. 31	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280H23060	LM-2(32)	1
LM	LDW280H23060	LTA-8(18)	1
LM	LDW280H23060	LTA-3(13)	1
PART NO. LDW280-10955-13		GAEC SCH NO. 31	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LDW 420-11262	LDW280H23234	SER# 16	1
LDW 420-11262	LDW280H23234	SER# 15	1
LDW420-11262	LDW280H23234	SER# 14	1
LM		LM 15(45)	1
		THRU	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
		LM-4(34)	1
		LM-3(33)	1
		LM-2(32)	1
		LTA-8(18)	1
LM	LDW280H23234	LTA-3(13)	1
PART NO. LDW280-10955-11		GAEC SCH NO. 31-2	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED
LAST DASH NO. USED -13-1

GRUMMAN REL INFO A
PRIM NO. 215
JK(001)
ME-314-10/25/[illegible]

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	H. KLONSKY 3-10-66	RELIABILITY	
LAYOUT BY	BONELLI		
CHECKED BY	J Kartzman 3-15-66		
GR LEADER	J. Poshter 3/18/66		
VEH DES INT	[illegible] 3/18		
STRUCTURES	[illegible] 3/25	PROJ ENGR	[illegible] 3-29-66
STRUCTURES	Hilberman 3/26	REL GROUP	[illegible] 3-30
WEIGHTS	[illegible] 3-29		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

PLATE
ASCENT STAGE-CABIN FLOOR+X215

SIZE B
CODE IDENT NO. 26512
LDW280-10955 A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 9-64

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00 & 1.10						LE0280-295	FOR -11 & -13 ADDED LEM 7(37) THRU LEM 15 (45) EFF. ADDED SHEET 1.10	LEM 7(37) THRU LEM 15(45)	NOT	REQD	OBERNIER 10-22-68	BC 10-23-68	
	2	1.00 & 1.10						LE0-280-471 LCD # 820	FOR -11 & -13 REMOVED LEM 3(33) THRU LEM 15 (45) EFF.	LM 3(33) THRU LM 15(45)		-11 & -13			
	3	1.00 & 1.10		A LFM54		✓		EOA3 LCD 2011 LCD 2175	IN M/B OF -11 & -13 ADDED LM 3 (33) THRU LM 15(45) & DELETED LM 1 (31)	LM 1(31) LM 3(33) THRU LM 15(45)	NOT	REQD			
	4	1.00 & 1.10 & 2.00					✓	EO A4	ADD -13-1 REMOVED LM 4(34) THRU LM 15 (45) EFFECT FROM -13	LM 4(34) THRU LM 15(45)	✓				
	5	1.00 & 1.10				✓		LE0280-1128 LCD 3357B	TO -11 & -13-1 ADDED END ITEM LDW 420-11262 S/N 14	LDW 420 -11262 S/N 14	NOT	REQD			
	6	1.00 & 1.10				✓		LE0280-1131 LCD 3357 B	TO -11 ADDED END ITEM LDW420-11262-S/N 15 & 16	LDW 420 -11262 S/N 15 & 16	NOT	REQD			
	7	1.00 & 1.10		LFM 269		✓		LE0280-1150 LCD 3501	FOR -13-1 ADDED LM 3(33) EFF FOR N/A LDW 280 H54060 FOR -13 REMOVED LM 3(33) EFF FOR N/A LDW 280 H23060	LM 3(33)		-13			

	LTR	GROUP LDR	VEH DES INT	STRUCT	STRUCT	WEIGHTS	RELIABILITY				
CHG APPROVED	A										

ENG 77.16 3-66

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10955	A
SCALE NONE		SHEET 1.10	

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10955-13-1	E	SPLICE	AL ALY SH	QQ-A-250/12	BARE 7075-T6	.050 X 2 1/4 X 3 1/8	NONE	88	
		LDW280-10955-13	E	SPLICE	AL ALY SH	QQ-A-250/12	BARE 7075-T6	.050 X 2 1/4 X 3 1/8	NONE	NONE	
		LDW280-10955-11	E	PLATE	AL ALY SH	QQ-A-250/12	BARE 7075-T6	.090 X 1 1/4 X 2 1/4	NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030						

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10955	A

SCALE NONE

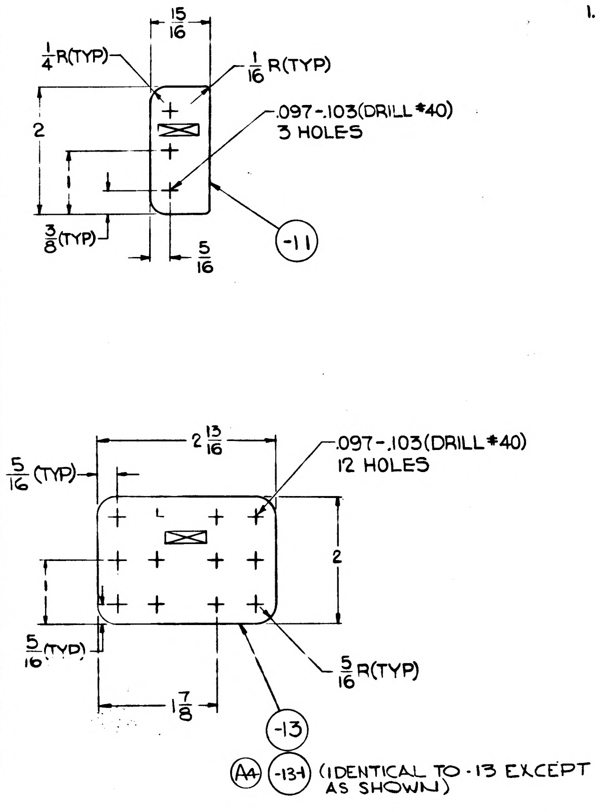
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS.



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ƒ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
LEM	SIZE C	CODE IDENT NO. 26512	LDW280-10955	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

LDW280-10955 A

01

NAS 9-1100

01 NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280 | EO NO. 1475
CONTROL INFO NO. LDW280B8049

IN MOD BLOCK
REMOVE LM-15(45) EFF FROM FOLLOWING PARTS:

DWG NO.	DASH NO.	TITLE	NEXT ASSY	QUANT. REQD	COMAT	CHANGE EO. Nº
✓ LDW280M10714	-5	HOUSING-BEARING	LDW280H23232	1	M	B4
✓ LDW280M10715	-1	HOUSING BEARING	LDW280H23233	1	M	A4
✓ LDW280M10716	-1	BEARING	LDW280H54060	1	M	A3
✓ LDW280M10717	-3	PIN	LDW280H54060	1	M	A3
✓ LDW280M10719	-3	TRUSS	LDW280H54060	1	M	B5
✓ LDW280M10722	-1 & -2	CHANNEL	LDW280H23235	1 EA	M	C1
✓ LDW280M10723	-1	FITTING	LDW280H23234	2	M	C1
✓ LDW280M10724	-3	FITTING	LDW280H23234	1	M	C1
✓ LDW280M10825	-1	CHANNEL	LDW280H23273	1	M	C5
✓ LDW280P10966	-13	CHANNEL	LDW280H23334	1	NM	B1
✓ LDW280-10620	-11-1	WEB	LDW280H54060	1	M	B6
✓ LDW280-10621	-17	WEB	LDW280H54060	1	M	B7
✓ LDW280-10788	-11 & -13	WEB	LDW280H23234	1 EA	M	C1
	-15		LDW280H23236	1		
✓ LDW280-10816	-11	CHANNEL	LDW280H23236	1	M	B3
	-13 & -15			2 EA		
✓ LDW280-10817	-11 & -13	CHANNEL	LDW280H54060	2 EA	M	B1
✓ LDW280-10927	-11 & -19	SKIN	LDW280H23235	2 EA	M	C1
	-13, -15 & -17			1 EA		
✓ LDW280-10955	-11	PLATE	LDW280H23234	1	M	B1
	-13-1		LDW280H54060	1		
LDW280-10979	-11	DOUBLER	LDW280H54060	1	M	B1
LDW280-11036	-15 & -17	BUMPER	LDW280H54060	2 EA	M	B3

DETAIL SPEC REQ ☐	CL II ENGRG CHG ☐	CL I ENGRG CHG ☑	LCD3587 PKG12 CCA1821 AMD#1	(5)

REASON FOR EO: PARTS NOT REQD FOR AAP

DESCRIPTION OF EO: (NOTED ABOVE)

GAEC EO RELEASE: 7-9-69; JK 7/10/69

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK | SCRAP ✓

APPROVED BY		EXO		F. R/V	CW		Gal	Both
DATE		7/3/69		7-2-69	7-8-69		7/8/69	7-10-69
	VDI	~~SUPPORT~~ mat.	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: C

DRAWING TITLE: (NOTED ABOVE)

DRAWING NO.: LEO280-

EO NO.: 1475

7-25-69
ISSUED BY P MARTELLO X86018 SECTION VEH DES INT GROUP NO. 335 PL 25

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10956-11	E	DOUBLER	AL ALLOY SH	QQA-250/12	7075-T6	056X6X67/8	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

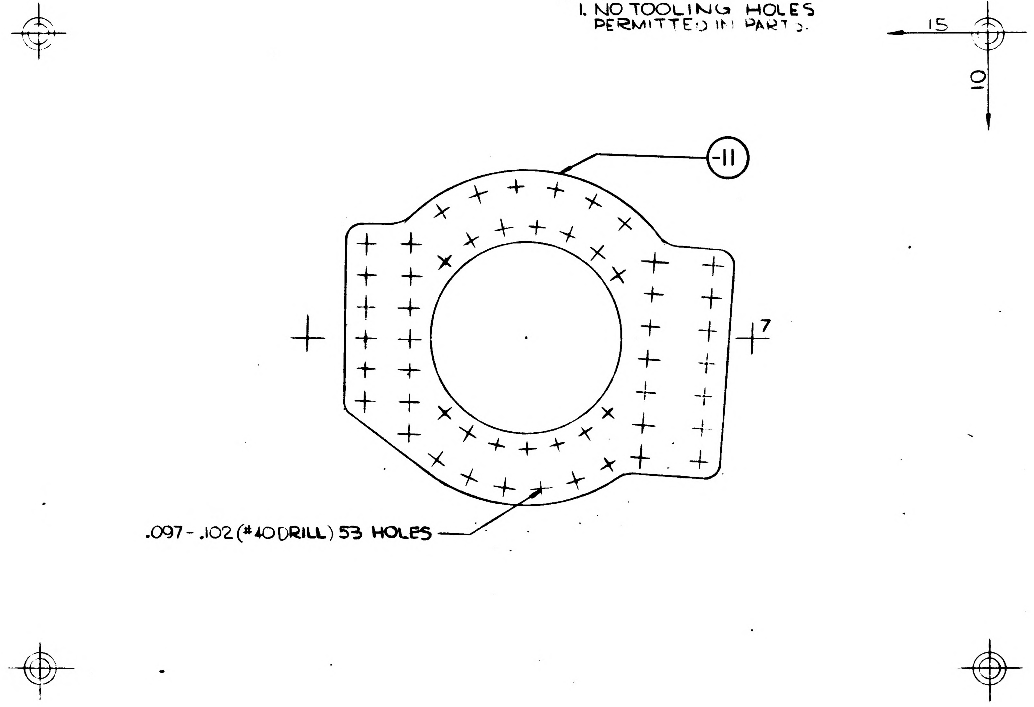
SIZE	CODE IDENT NO.		
B	26512	LDW280-10956	A
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES
1. NO TOOLING HOLES PERMITTED IN PARTS.



MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ~~USE BOTH SIDES IF NECESSARY.~~	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	√

	R GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE C	CODE IDENT NO. 26512	LDW280-10956	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

LDW280-10956 A

LDW280-10956 A

2 FOR PHOTO

REPRODUCTION 1

K2

NAS 9-1100

01

LDW280-10956 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23012	LTA-3 (13)	1
LEM	LDW280-53018	LEM-3(33)	2
LEM	LDW280-28018	LEM-2(32)	2
LEM	LDW280-28018	LEM-1(31)	2
LEM	LDW280-28018	LTA-8(18)	2
PART NO. LDW280-10956-11		GAEC SCH NO. 31-2	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	B	B	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -11

GRUMMAN REL^c INFO B

PRIM NO. 215 LE(001) MP 7/28/6B [illegible]

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	T.FREDA 4-20-66	RELIABILITY	
LAYOUT BY	J.LEONARD		
CHECKED BY	WCG 4/27/66		
GR LEADER	5/3/66		
VEH DES INT	WR BISCHOFF		
STRUCTURES	5/4	PROJ ENGR	5-11-66
STRUCTURES	5/5	REL GROUP	5-16
WEIGHTS	5-11		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DOUBLER
ASCENT STAGE - MID SECTION
+Z 27 BLK HD REINFORCING

SIZE B | CODE IDENT NO. 26512 | LDW280-10956 B
SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	~~SH CHG LTR~~	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
A	1	1.00, 1.10, 2.00, 3.00							E.O. A1	EO A1 INITIAL DWG RELEASE PART MADE PER EO	LTA-8, LEM-1,2,3	NOT	REQD	WCG T. TREDA 4-20-66	[illegible]	[illegible] 5-11-66
B	1	1.00 & 1.10							E.O.B1	ON-11 & -12 ADDED LTA-3(13), QUANTITY & N/A LDW 280-23012 TO MOD BLK	LTA-3	NOT	REQD	P. Caro 7-10-66		
	2									REF E.O.B1 ON-11 & -12 SHOULD BE ON-11	NOT REQD	NOT	REQD		[illegible]	[illegible]

FOR CONTINUATION OF REVISIONS SEE SHEET

ENG 77.3 5-64

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LWD280-10956	B
SCALE NONE			SHEET 1.10

01

NAS 9-1100

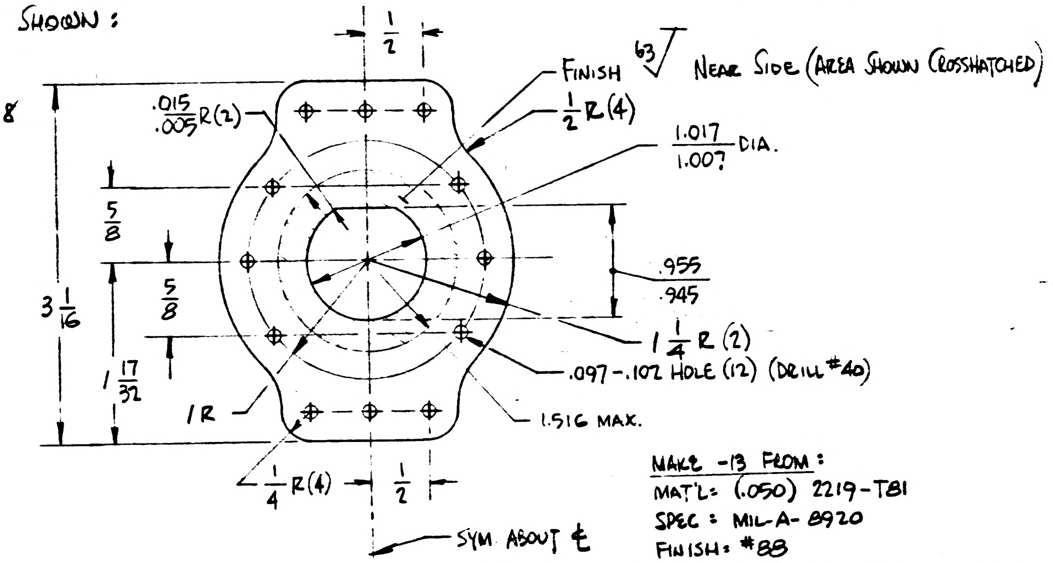
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW 280-10956	EO NO. C2
CONTROL INFO NO.	LDW 280 B - 2532

CREATE -13 AS SHOWN:

EFF: LM-3 (33)
N/A: LDW 280-53018
QTY: 1 REQ'D



1/2
FINISH 63√ NEAR SIDE (AREA SHOWN CROSSHATCHED)
.015/.005 R(2)
1/2 R(4)
1.017/1.007 DIA.
5/8
5/8
.955/.945
3 1/16
1 1/4 R (2)
1 17/32
.097-.102 HOLE (12) (DRILL #40)
1R
1.516 MAX.
1/4 R(4)
1/2
SYM ABOUT ℄

MAKE -13 FROM:
MAT'L: (.050) 2219-T81
SPEC: MIL-A-8920
FINISH: #88

I & T = "E"

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	✓	LCD# 2705	PKG #1

REASON FOR EO: ADDITION OF (1) CONNECTOR HOLE IN +Z27 BULKHEAD

DESCRIPTION OF EO: CREATED -13

GAEC EO RELEASE: 3/6

MODEL	~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	~~SUB CONTR UNIT NO.~~
LM		LM-3 (33)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
				DATE	3/4/68			3-4-68	3-5		3/5/68	3/5/68
✓ REVISE DWG	RECORD EO	REWORK Not	SCRAP Reqd	A	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CUST~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	DOUBLER - A/S, M/S, +Z27 BKHD, REINFORCING	LDW 280-10956	C2

3/5/68
ISSUED BY Geo. W. Rocklein x7033 3/4/68 SECTION Veh. Des. Int GROUP NO. 335 PL 25

01 NAS 9-1100

-10	-9	-8	-7	-5	-4	-3	-2	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
										LDW280-10957-23	E	ANGLE	AL ALLOY SH	QQ-A-250/4	2024	.036X1 1/2 X 2 1/8	T3/T42	88	
										-21		ANGLE				.036X1 1/2 X 1 7/8			
1										-20		ZEE				.036X 2X10 7/8			
	1									19		ZEE				.036X2X10 7/8			
		1								-18		ZEE				.036X2X13 7/8			
			1							LDW280-10957-17		ZEE	AL ALLOY SH	QQ-A-250/4	2024	.036X 2X13 7/8	T3/T42	88	
										LDW280-10957-10		SUPPORT ASSY					NONE	NONE	
										LDW280-10957-9		SUPPORT ASSY					NONE	NONE	
										LDW280-10957-8		SUPPORT ASSY					NONE	NONE	
										LDW280-10957-7		SUPPORT ASSY					NONE	NONE	
7	7	9	9	1	7	7	9	9		NAS697A08		NUT PLATE	STD PART						
										MS20426 AD 3		RIVET	STD PART						
				1						LDW280-10957-15		SUPPORT	AL. ALLOY SH.	QQ-A-250/4	2024	.036X 1 1/2 X 1 5/8	T3/T42	88	
					1					-14						.036X 1 1/2 X10 7/8			
						1				-13						.036X 1 1/2 X10 7/8			
							1			-12						.036X 1 1/2 X13 3/4			
								1		LDW280-10957-11		SUPPORT	AL. ALLOY SH.	QQ-A-250/4	2024	.036X 1 1/2 X13 3/4	T3/T42	88	
										LDW280-10957-5		SUPPORT ASSY					NONE	NONE	
										LDW280-10957-4									
										LDW280-10957-3									
										LDW280-10957-2									
										LDW280-10957-1	E	SUPPORT ASSY					NONE	NONE	

QTY PER ASSEMBLY

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T42	AL HEAT TREAT	MIL H-6088

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10957	A

SCALE NONE

SHEET 2.00

ENG 77.2 7-66

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280- 51297	LEM-2(32)	1
LM	LDW280-51297	LEM-1(31)	1
LM	LDW280-28297	LTA-8(18)	1

PART NO. LDW280-10957-23

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54297	LM-15(45)	2
		LM-14(44)	2
		LM-13(43)	2
		LM-12(42)	2
		LM-11(41)	2
		LM-10(40)	2
		LM-9(39)	2
		LM-8(38)	2
		LM-7(37)	2
		LM-6(36)	2
		LM-5(35)	2
	LDW280-54297	LM-4(34)	2
	LDW280-53297	LM-3(33)	2
	LDW280-51297	LM-2(32)	3
	LDW280-51297	LM-1(31)	3
	LDW280-29297	LTA-8(18)	3
LM	LDW280-23297	LTA-3(13)	2

PART NO. LDW280-10957-4 — GAEC SCH NO. 32-5

LDW280-10957 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-51297	LM-2(32)	2
LM	LDW280-51297	LM-1(31)	2
LM	LDW280-28297	LTA-8(18)	2

PART NO. LDW280-10957-3 — GAEC SCH NO. 32-5

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53297	LM-3(33)	2
LM	LDW280-51297	LM-2(32)	1
LM	LDW280-51297	LM-1(31)	1
LM	LDW280-28297	LTA-8(18)	2

PART NO. LDW280-10957-2

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54297	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
	LDW280-54297	LM-4(34)	1
	LDW280-53297	LM-3(33)	1
	LDW280-51297	LM-2(32	3
	LDW280-51297	LM-1(31	3
	LDW280-28297	LTA-8(18)	3
LM	LDW280-23297	LTA-3(13)	1

PART NO. LDW280-10957-1 — GAEC SCH NO. 32-5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	A	B					
SHEET	1.01								
REV	B								
SHEET									
REV									

LAST SECT LTR USED	E-E	GRUMMAN REL INFO B		
		PRIM NO.	JL (ah)	
LAST DASH NO. USED	-23	215	MP 51	B 70-67

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.015 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 | LINE ITEM 1 | DOCUMENTATION TYPE II

DRAWN BY	G.PELLEGRINO 3-23-66	RELIABILITY	
LAYOUT BY	G.PELLEGRINO 3-23		
CHECKED BY	G.WHISTON 3-24		
GR.LEADER	PHILLIPS 3-26		
VEH.DES.INT.	BISHOFF 3-26		
STRUCT	FEB BW 3-29	PROJ ENGR	J. ALBERT 3-30
STRUCT	HILDERMAN 3-29	REL GROUP	BOTTI 4-1-66
WEIGHTS	ROBESCH 3-30		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT ASSY
ASCENT STAGE-MID SECTION-X287.00

SIZE B | CODE IDENT NO. 26512 | LDW280-10957 | B Ⓑ
SCALE NONE | SHEET 1.00 OF 5

ENG 77.1 12-65

SUPERSEDES LDW280-10957 N C 4-1-66

01 NAS 9-1100

LDW280-10957 B

PART NO. LDW280-10957-9

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54297	LM-15(45)	2
		LM-14(44)	2
		LM-13(43)	2
		LM-12(42)	2
		LM-11(41)	2
		LM-10(40)	2
		LM-9(39)	2
		LM-8(38)	2
		LM-7(37)	2
		LM-6(36)	2
		LM-5(35)	2
	LDW280-54297	LM-4(34)	2
	LDW280-53297	LM-3 (33)	2
LM	LDW280-23297	LTA-3(13)	2

PART NO. LDW280-10957-7,-8, -10 & -21

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54297	LM-15(45)	1 EA
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
	LDW280-54297	LM-4(34	1
	LDW280-53297	LM-3(33)	1
LM	LDW280-23297	LTA-3(13)	1 EA

PART NO. LDW280-10957-5

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
'LM	LDW280-54297	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
	LDW280-54297	LM-4(34)	1
	LDW280-53297	LM-3(33)	1
	LDW280-51297	LM-2(32)	1
	LDW280-51297	LM-1(31)	1
	LDW280-28297	LTA-8(18)	1
LM	LDW280-23297	LTA-3(13)	1

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET									
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED

GRUMMAN REL INFO

PRIM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED

FRACTIONS - DECIMALS – ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO.

LINE ITEM

DOCUMENTATION TYPE

DRAWN BY

LAYOUT BY

CHECKED BY

PROJ ENGR

REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SIZE B

CODE IDENT NO. 26512

LDW280-10957 B

SCALE NONE

SHEET 1.0 OF

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHG LAST REV. NO CHG						
A	1	1,1.10,2,3					✓	EOA1	IN FIELD & B/M: NAS697A08 (WAS NAS697-832) FOR -1,-3,-4 & -5 SH 1.00 OF 4 WAS SH #1	LTA-8, LEM-2, LEM-1	✓		F. HIPPLER 5-18-66 E.G		
	2	1,1.10,2,3					✓	EOA2	IN FIELD: ADDED -2 & DELETED NO. REQ. COLUMN FROM PARTS LIST. IN SECT. A-A DELETED NO. REQ. CALLOUT FOR -1 & -2. IN MODEL BLOCK: ADDED -2 3 REQ. (WAS 2 REQ) FOR -1. N/A FOR LEM-1 & LEM-2 IS LDW280-51297 (WAS LDW280-28297)	LTA-8, LEM-2, LEM-1	✓				©
	3	1.00,1.10,2.00 & 3.00					✓	E.O A3	IN FLD & B/M: ADDED -7,-8,-9,-10,-21 EXTENDED EFFECTIVITY OF -1,-4 & -5 TO LEM-3	LEM-3	NOT	REQ'D	R.NISBET 6-14-66		
	4	1.00, 1.10, 2.00 & 3.00					✓	E.O A4	IN FLD & B/M ADDED -23	LEM-1, -2 LTA-8	NOT	REQ'D			
B	1	1.00,1.11 1.10						LEO280-119	FOR -1, -4, -5, -7, -8, -9, -10 & -21 ADDED LTA-3(13) REQMT. ADDED SH 1.11 SH 1.00 OF 5 WAS 1.00 OF 4.	LTA-3	NOT	REQ'D	J Gardello 7-5-67		
	2	1.00,1.10,3.00						EO B2	TRIMMED -7	LTA-3, LM-3	✓				
	3	1.00, 1.11 1.10						EO B3	CANCELLED BY EO B4	NOT REQD	NOT	REQ'D			
	4	1.00, 1.10					✓	EO B4	EO CANCELS EOB-3	NOT REQD	NOT	REQ'D			
	5	1.00, 1.11 1.10					✓	LEO280-231	FOR -1 -4 -5 -7 -8 -9 -10 & -21 ADDED LM-4 THRU -15 EFF. REQUIREMENTS	LM-4 THRU LM-15	NOT	REQ'D			
	6	1.00, 1.10 300						EO B6	REVISION OF EO B2 -7 SHOULD BE -17 AS	LTA-3, LM-3	✓				

FOR CONTINUATION OF REVISIONS SEE SHEET

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

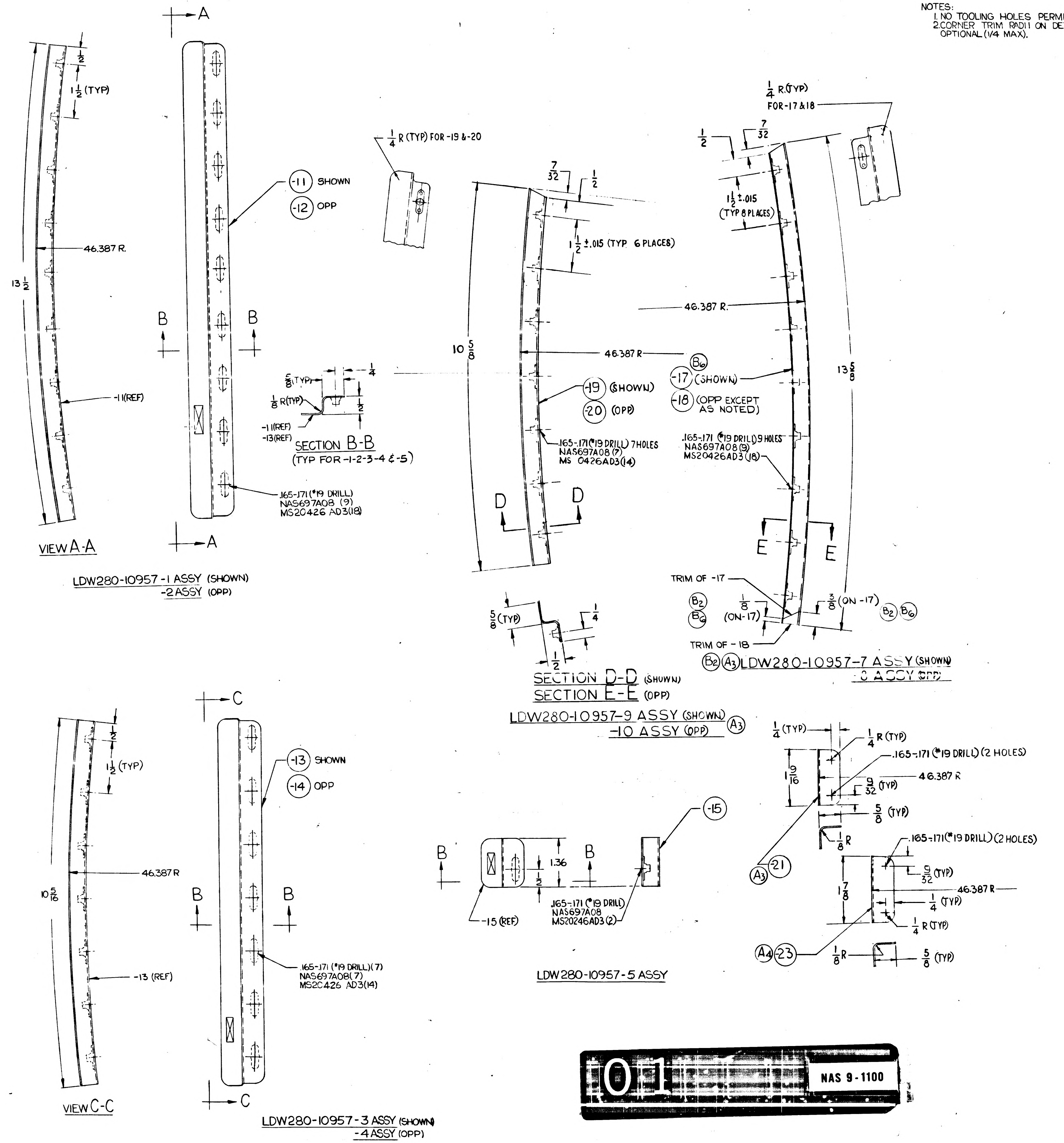
SIZE	CODE IDENT NO.		
B	26512	LDW280-10957	B
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS
2. CORNER TRIM RADII ON DETAIL PARTS OPTIONAL (1/4 MAX).


A
A
46.387 R.
$\frac{1}{2}$
$1\frac{1}{2}$ (TYP)
$13\frac{1}{2}$
-11 (REF)
VIEW A-A
-11 SHOWN
-12 OPP
B
B
.165-.171 (#19 DRILL)
NAS697A08 (9)
MS20426 AD3 (18)
LDW280-10957-1 ASSY (SHOWN)
-2 ASSY (OPP)
$\frac{1}{4}$ R (TYP) FOR -19 & -20
$\frac{5}{8}$ (TYP)
$\frac{1}{4}$
$\frac{1}{8}$ R (TYP)
$\frac{1}{2}$
-11 (REF)
-13 (REF)
SECTION B-B
(TYP FOR -1-2-3-4 & -5)
$\frac{7}{32}$
$\frac{1}{2}$
$1\frac{1}{2}$ ±.015 (TYP 6 PLACES)
$10\frac{5}{8}$
46.387 R
-19 (SHOWN)
-20 (OPP)
.165-.171 (#19 DRILL) 7 HOLES
NAS697A08 (7)
MS 0426AD3 (14)
D
D
$\frac{5}{8}$ (TYP)
$\frac{1}{4}$
$\frac{1}{2}$
SECTION D-D (SHOWN)
SECTION E-E (OPP)
LDW280-10957-9 ASSY (SHOWN)
-10 ASSY (OPP) A3
$\frac{1}{4}$ R. (TYP)
FOR -17 & 18
$\frac{1}{2}$
$\frac{7}{32}$
$1\frac{1}{2}$ ±.015
(TYP 8 PLACES)
46.387 R.
B6
-17 (SHOWN)
-18 (OPP EXCEPT AS NOTED)
$13\frac{5}{8}$
.165-.171 (#19 DRILL) 9 HOLES
NAS697A08 (9)
MS20426AD3 (18)
E
E
TRIM OF -17
B2
B6
$\frac{1}{8}$ (ON -17)
$\frac{3}{8}$ (ON -17) B2 B6
TRIM OF -18
B2 A3 LDW280-10957-7 ASSY (SHOWN)
-8 ASSY (OPP)
C
C
$\frac{1}{2}$
$1\frac{1}{2}$ (TYP)
$10\frac{5}{16}$
46.387 R
-13 (REF)
VIEW C-C
-13 SHOWN
-14 OPP
B
B
.165-.171 (#19 DRILL) (7)
NAS697A08 (7)
MS20426 AD3 (14)
LDW280-10957-3 ASSY (SHOWN)
-4 ASSY (OPP)
B
B
1.36
$\frac{1}{2}$
-15 (REF)
.165-.171 (#19 DRILL)
NAS697A08
MS20246AD3 (2)
-15
LDW280-10957-5 ASSY
$\frac{1}{4}$ (TYP)
$\frac{1}{4}$ R (TYP)
.165-.171 (#19 DRILL) (2 HOLES)
$1\frac{9}{16}$
46.387 R
$\frac{9}{32}$ (TYP)
$\frac{5}{8}$ (TYP)
$\frac{1}{8}$ R
A3 -21
.165-.171 (#19 DRILL) (2 HOLES)
$\frac{9}{32}$ (TYP)
$1\frac{7}{8}$
46.387 R
$\frac{1}{4}$ (TYP)
$\frac{1}{4}$ R (TYP)
A4 -23
$\frac{1}{8}$ R
$\frac{5}{8}$ (TYP)

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

LM	SIZE E	CODE IDENT NO. 26512	LDW280-10957	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

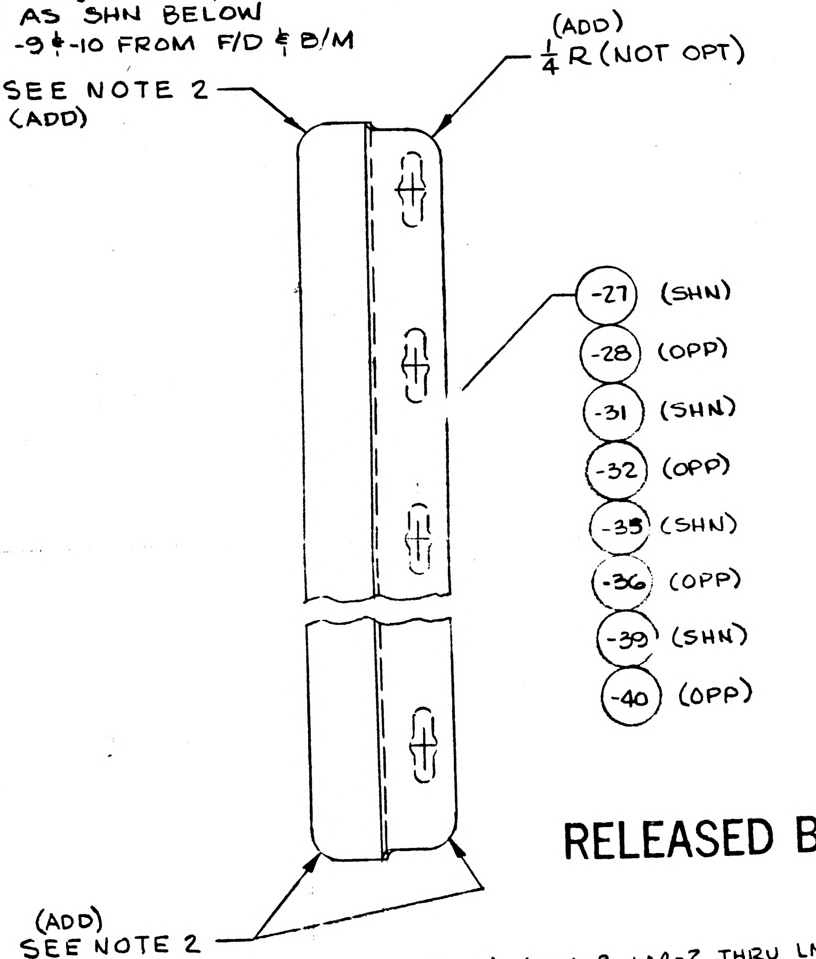
ENG 32.2 REV 3-65

Ⓐ

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10957		EO NO.	C1
CONTROL INFO NO.	LM5-13288		

1. CREATE -25, -26, -27 & -28 IDENTICAL TO -1, -2, -11 & -12 RESPECTIVELY
   EXCEPT AS SHOWN BELOW
   REMOVE -1 FROM LTA-8(18), LM-2(32) THRU LM-15(45)
   REMOVE -2 FROM LTA-8(18) & LM-2(32)
2. CREATE -29, -30, -31 & -32 IDENTICAL TO -3, -4, -13 & -14 RESPECTIVELY
   EXCEPT AS SHOWN BELOW
   REMOVE -3 FROM LTA-8(18) & LM-2(32)
   REMOVE -4 FROM LTA-8(18), LM-2(32) THRU LM-15(45)
3. CREATE -33, -34, -35 & -36 IDENTICAL TO -7, -8, -17 & -18 RESPECTIVELY
   EXCEPT AS SHN BELOW
   REMOVE -7 & -8 FROM F/D & B/M
4. CREATE -37, -38, -39 & -40 IDENTICAL TO -9, -10, -19 & -20 RESPECTIVELY
   EXCEPT AS SHN BELOW
   REMOVE -9 & -10 FROM F/D & B/M



RELEASED BY LIAISON

-25 ASSY (SHN) (LTA-8, LM-2 THRU LM-15)
-26 ASSY (OPP) (LTA-8 & LM-2)
-29 ASSY (SHN) (LTA-8 & LM-2)
-30 ASSY (OPP) (LTA-8, LM-2 THRU LM-15)
-33 ASSY (SHN) (LM-3 THRU LM-15)
-34 ASSY (OPP) (LM-3 THRU LM-15)
-37 ASSY (SHN) (LM-3 THRU LM-15)
-38 ASSY (OPP) (LM-3 THRU LM-15)

5

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG		LCD-1552	GAEC EO RELEASE
							JK

REASON FOR EO: TO REMOVE PHYSICAL HAZARDS FROM THE CREW COMPARTMENT

DESCRIPTION OF EO: CREATED -25 THRU -40
REMOVED -1 & -4 FROM LTA-8, LM-2 THRU LM-15
REMOVED -2 & -3 FROM LTA-8 & LM-2, -7, -8, -9 & -10 FROM F/D & B/M

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO	SUB CONTR UNIT NO.
LM		LTA-8 (18)	
		LM-2(32) THRU	
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

	APPROVED BY	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
	WT			~	JF		DAM	
DATE	5/17/67			~	5-18	5-18-67	5-24-67	5/18/67
	/ VDI							

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SUPPORT ASSY ~ ASCENT STAGE MID-SECTION ~ X 287.00	LDW280-10957	C1

ISSUED BY W. TRAUT x6510 SECTION VDI GROUP NO. 335 PL 5

01
NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER *

DWG. NO. LDW280-10957
EO NO. C2
CONTROL INFO NO. LDW280A-8851

FOR -1 & -8 —— 2 REQD/VEH. WAS 1 REQD/VEH.

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD 1981 CCA657 5

REASON FOR EO: DELETION OF EXTRAVEHICULAR CREW TRANSFER DEVICE REQUIRES ADDITION OF LINES SUPT. BRACKETS.

DESCRIPTION OF EO: FOR -1 & -8 2 REQD/VEH. WAS 1 REQD/VEH.

Ⓡ GAEC EO RELEASE: JK 9/12/67

MODEL	EFFECTIVITY PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LM4(34) THRU LM15(45)		

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		NOT REQD	

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONT~~
APPROVED BY				FNR	AW			
DATE	9/11/67			9/11/67	9-11		9/11/67	9-12-67

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SUPPORT ASSY A/S M/S X 287.00	LDW280-10957	C2

9/18
ISSUED BY E. STAHL X7033 9-7-67 SECTION V.D.I. GROUP NO. 335 PL 25

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 760
CONTROL INFO NO. LM-3-5625

DRAWING NO.	CHG.	DESCRIPTION OF CORRECTION	
✓ LDW280-23072	H4	ON INCORP. OF E.O. H1 -6 WAS -2	LM-3 (33) THRU LM-15 (45)
✓ LDW280-10957	C3	ON INCORP. OF E.O. C2 -25 & -34, WAS -1 & -8 RESP.	LM-4 (34) THRU LM-15 (45)
LDW280-54297	B7	ON INCORP. OF E.O. B6 LDW280-10957-25 & -34 WAS LDW280-10957 -1 & -8 RESP.	LM-4 (34) THRU LM-15 (45)
LDW280-23579	D8	ON INCORP. OF E.O. D6 CREATE-11 WAS CREATE-7	LM-4 (34) THRU LM-15 (45) DVT (70)
LDW280-236[illegible]	B5	ON INCORP. OF E.O. B4 LDW 280-17453-23 & -27 WAS LDW 280-17543-23 & -27	LFM-41 LTA-5 (15)
LDW280-11909	A6	ON INCORP. OF E.O. A4 ON -15 & -25 WAS ON -15	LM-2 (32) THRU LM-15 (45) M-6

DETAIL SPEC REQ ☐ CL II ENGRG CHG ✓ CL I ENGRG CHG ☐

3

REASON FOR EO: PROVIDE MULTIPLE DRAWING CORRECTIONS

DESCRIPTION OF EO: NOTED

GAEC EO RELEASE: JK

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOTED	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		NOT REQD	

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY	JRS			—	—		ARB	
DATE	10/27/67			—	—	10-23-67	10/27/67	10-25-67
	VDI							

PRIORITY: C
DRAWING TITLE: SEE DRAWING
DRAWING NO.: LEO 280
EO NO.: 760

ISSUED BY LIAISON / VIC BOLLO X2151 SECTION VDI GROUP NO. 280 PL 25

01

NAS 9-1100

QTY PER ASSEMBLY						CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
-21	-9	-7	-5	-3	-1											
							MS20426AD3	E	RIVET	STD PART						
4	4	4	6	5	5		NAS697A08		PLATE NUT	STD PART						
1							LDW280-10958-31		ZEE	AL ALLOY SH	QQ-A-250/4	2024-T3	.036x3 x 5 7/8	NONE	88	
		1					LDW280-10958-17		ZEE	AL ALLOY SH	QQ-A-250/4	2024-T3	.036 x 2 3/8 x 5 5/8	NONE	88	
	1		1				LDW280-10958-15		ANGLE	AL ALLOY SH	QQ-A-250/4	2024-T3	.036 x 1 3/8 x 8 3/4	NONE	88	
				1			LDW280-10958-13		ANGLE	AL ALLOY SH	QQ-A-250/4	2024-T3	.036 x 1 7/8 x 6 1/2	NONE	88	
					1		LDW280-10958-11		ANGLE	AL ALLOY SH	QQ-A-250/4	2024-T3	.036 x 1 3/8 x 5 1/8	NONE	88	
							LDW280-10958-21		SUPPORT ASSY					NONE	NONE	
							LDW280-10958-9		SUPPORT ASSY					NONE	NONE	
							LDW280-10958-7		SUPPORT ASSY					NONE	NONE	
							LDW280-10958-5		SUPPORT ASSY					NONE	NONE	
							LDW280-10958-3		SUPPORT ASSY					NONE	NONE	
							LDW280-10958-1	E	SUPPORT ASSY					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B

CODE IDENT NO. 26512

LDW280-10958

B

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

LDW280-10958 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54297	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
	LDW280-54297	LM-4(34)	1
	LDW280-53297	LM-3(33)	1
	LDW280-51297	LM-2(32)	1
	LDW280-51297	LM-1(31)	1
	LDW280-28297	LTA-8(18)	1
LM	LDW280-23297	LTA-3(13)	1

LDW280-10958-21

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-51297	LEM-2(32)	1
LEM	LDW280-51297	LEM-1(31)	1
LEM	LDW280-28297	LTA-8(18)	1

PART NO. LDW280-10958-7
GAEC SCH NO. 32

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW 280-23297	LTA-3(13)	1 EA
LEM	LDW 280-53297	LEM-3(33)	1 EA
LEM	LDW280-51297	LEM-2(32)	1 EA
LEM	LDW280-51297	LEM-1(31)	1 EA
LEM	LDW280-28297	LTA-8(18)	1 EA

PART NO. LDW280-10958-5-9
GAEC SCH NO. 32

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54297	LM-15(45)	1 EA
		LM-14(44)	1 EA
		LM-13(43)	1 EA
		LM-12(42)	1 EA
		LM-11(41)	1 EA
		LM-10(40)	1 EA
		LM-9(39)	1 EA
		LM-8(38)	1 EA
		LM-7(37)	1 EA
		LM-6(36)	1 EA
		LM-5(35)	1 EA
		LM-5(35)	1 EA
	LDW280-54297	LM-4(34)	1 EA
	LDW 280-53297	LM-3(33)	1 EA
	LDW 280-51297	LM-2(32)	1 EA
	LDW280-51297	LM-1(31)	1 EA
	LDW280-28297	LTA-8(18)	1 EA
LM	LDW280-23297	LTA-3(13)	1 EA

PART NO. LDW280-10958-1,-3
GAEC SCH NO. 32

5
LINE ITEM #1
DOCUMENTATION TYPE II

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	C	C	B	C					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED E-E
LAST DASH NO. USED -31
GRUMMAN REL INFO C
PRIM NO. 215
JK(001)
MP 14 C-4/10/

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.015 ±1/2
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
DRAWN BY G.PELLEGRINO 3-24
LAYOUT BY G.PELLEGRINO 3-24
CHECKED BY G.WHISTON 3-25
GP LEADER R.PHILLIPS 3-25-66
VEH DES INT W.BISCHOFF BW 3-26
STRUCTURES F.E.B.
STRUCTURES HILDERMAN 3-29
WEIGHTS D.ROBESCH DJL 3-30
RELIABILITY
PROJ ENGR J.ALBER RMC 3-30
REL GROUP BOTTI 4-1-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT ASSY
ASCENT STAGE-MID-SECTION-X277.00
EQUIPMENT LINES

SIZE B
CODE IDENT NO. 26512
LDW280-10958 C
SCALE NONE
SHEET 1.00 OF 4

THIS DWG SUPERSEDES LDW280-10958 NC 3-24-66

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
									RETRACED NO CHG LAST REV NC. ADDED SH 1.10. SH 1.00 OF 4 WAS SH 1 OF 1				L. BRIDA 5-18-66		
A	1	1.00, 1.10, 2.00, & 3.00					✓	EO A1	IN FIELD & B/M FOR -1, -3, -5, -6, & -7 NAS697A08 WAS NAS697-832.	NOTED	-1, -3, -5, -6 & -7				
	2	1.00, 1.10 2.00, & 3.00						Ⓡ	REMOVED -6.	NOTED		-6			
B	1	1.00, 1.10 2.00 & 3.00					✓	EO B1	IN FIELD & B/M: ADDED -9, -21. EXTENDED EFF. OF -1-3 & -5 TO LEM-3. IN FIELD; DELETE -6 & -16 "CALLOUT". N/A FOR LEM-1 & -2 IS LDW280-51297 (WAS LDW280-28297) FOR LTA-8, LEM-1 & LEM-2: 1 REQD OF -5 (WAS 2 REQD)	LEM-3	✓		J. CITRANO 6-30-66		
	2	1.00, 1.10 3.00						EO B2	ADDED NOTCH IN -13 & VIEW D-D	LTA-8 LEM-1 & -2	✓				
	3	1.00 1.10						LEO280-119	FOR LDW280-10958 -1-3-5-9 & -21 ADDED LTA-3 (13) REQMT.	LTA-3	NOT	REQD			
	4	1.10 3.00						EO B4	TRIMMED DASH-3	LTA-3 & -8 LEM-1, -2-3	✓				
	5	1.10 3.00					✓	EO-B5	IN FIELD: ADDED .36 DIM (WAS 1/2), 6.06 DIM (6 3/16). REVISED TRIM-3.	LTA-8 LEM-1-2-3	✓				
	6	1.10						Ⓡ	REF EO B1, DELETE -6 & -16 CALLOUT NOT APPLICABLE	NOT REQD	NOT	REQD	S.J.		
C	1	1.10 & 3						EO-C1	IN FIELD FOR -5 RELOCATED HOLE. ADDED 3/8 (REF)	LTA-3-8, LM1-2-3	✓		JESAITIS, T B. 4-27-67	4-5-67	4/7/67
	2	1.00 & 1.10						LEO280-231	FOR -1, -3 & -21 ADDED LM-4 THRU -15 EFF. REQUIREMENTS	LM-4 THRU -15	NOT	REQD			
	3	1.10 & 3							FOR -1 ADDED VIEW E-E & (4) #40 HOLES.	LTA-3, -8 LM-1 THRU LM-15	✓				
	4	1.10 & 3							FOR -3 IN VIEW D-D ADDED (4) #40 HOLES						
	5	1.10 & 3							FOR -5 ADDED AUX. VIEW & (6) #40 HOLES						
	6	1.10 & 3						Ⓡ	FOR -9 ADDED AUX. VIEW & (6) #40 HOLES						

FOR CONTINUATION OF REVISIONS SEE SHEET ________

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

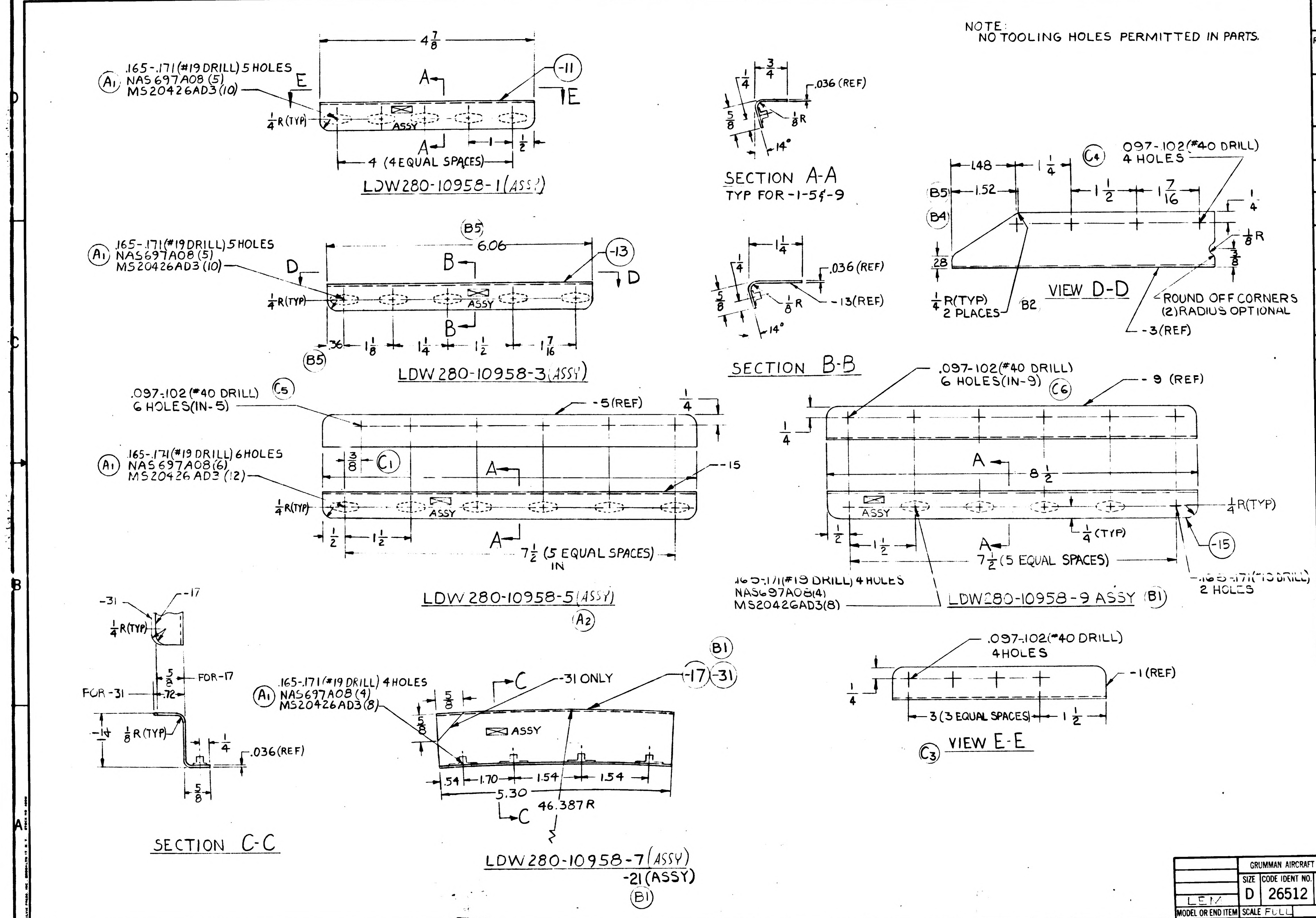
SIZE	CODE IDENT NO.		
B	26512	LDW280-10958	C
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

NOTE:
NO TOOLING HOLES PERMITTED IN PARTS.


.165-.171 (#19 DRILL) 5 HOLES
NAS697A08 (5)
MS20426AD3 (10)
A1
4 7/8
A
E
-11
1/4 R (TYP)
ASSY
4 (4 EQUAL SPACES)
1
1/2
LDW280-10958-1 (ASSY)
SECTION A-A
TYP FOR -1-5 & -9
3/4
1/4
.036 (REF)
5/8
1/8 R
14°
B5
6.06
-13
D
B
.36
1 1/8
1 1/4
1 1/2
1 7/16
LDW280-10958-3 (ASSY)
SECTION B-B
1 1/4
.036 (REF)
-13 (REF)
1.48
1.52
B4
.28
097-.102 (#40 DRILL)
4 HOLES
C4
1 1/2
1 7/16
1/8 R
3/8
1/4 R (TYP)
2 PLACES
B2
VIEW D-D
ROUND OFF CORNERS
(2) RADIUS OPTIONAL
-3 (REF)
.097-.102 (#40 DRILL)
6 HOLES (IN-5)
C5
-5 (REF)
.165-.171 (#19 DRILL) 6 HOLES
NAS697A08 (6)
MS20426AD3 (12)
3/8
C1
-15
7 1/2 (5 EQUAL SPACES)
IN
LDW280-10958-5 (ASSY)
A2
.097-.102 (#40 DRILL)
6 HOLES (IN-9)
C6
-9 (REF)
8 1/2
1/4 R (TYP)
1/4 (TYP)
-15
.165-.171 (#19 DRILL) 4 HOLES
NAS697A08 (4)
MS20426AD3 (8)
.165-.171 (#19 DRILL)
2 HOLES
LDW280-10958-9 ASSY
B1
-31
-17
1/4 R (TYP)
FOR -31
FOR -17
3/8
.72
1/8 R (TYP)
.036 (REF)
5/8
SECTION C-C
.165-.171 (#19 DRILL) 4 HOLES
NAS697A08 (4)
MS20426AD3 (8)
C
-31 ONLY
-17 -31
.54
1.70
1.54
1.54
5.30
46.387R
LDW280-10958-7 (ASSY)
-21 (ASSY)
.097-.102 (#40 DRILL)
4 HOLES
-1 (REF)
3 (3 EQUAL SPACES)
1 1/2
C3
VIEW E-E

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY~~.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW 280-10958	C
	SCALE FULL		SHEET 3.00	

NAS 9-1100

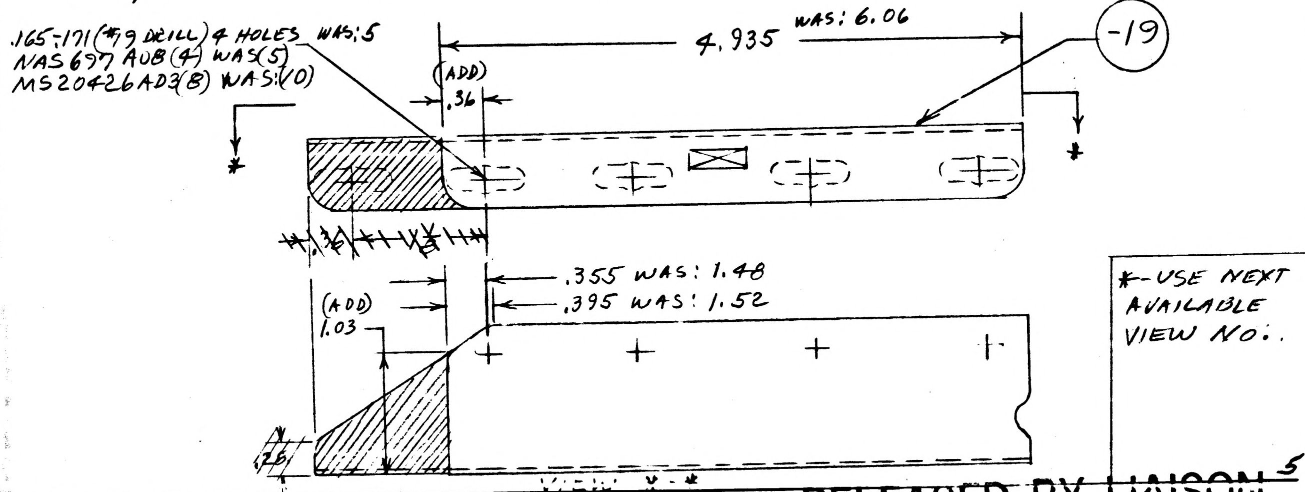
A

ENG 32.1 REV 3-66

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10958 | EO NO. D1
CONTROL INFO NO. LM-5 15310

IN FLD/DWG & B/M CREATE -23 ASSY BY REWORKING -3 ASSY
-23 ASSY IS SAME AS -3 ASSY EXCEPT AS SHOWN:
IN M/B REMOVE -3 FROM LM-3 (33), & ADD -23 TO LM-3(33), SAME N/A & QUANTITY



.165-.171 (#9 DRILL) 4 HOLES WAS: 5
NAS697 AU8 (4) WAS (5)
MS20426AD3(8) WAS: (0)
(ADD) .36
4.935 WAS: 6.06
-19
*
*
.355 WAS: 1.48
.395 WAS: 1.52
(ADD) 1.03
.25
VIEW X-*
*-USE NEXT AVAILABLE VIEW NO.

RELEASED BY LIAISON 5

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG	

REASON FOR EO: STRUCTURAL CLEARANCE REQ'D FOR VIBRATION ACCEL.

DESCRIPTION OF EO: IN FLD, B/M & M/B REMOVED -3 ASSY FROM LM-3 & ADDED -23 ASSY FOR LM-3 & REVISED TRIM OF -19.

GAEC EO RELEASE: JK

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3(33)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓ REVISE DWG	RECORD EO	-3 REWORK	SCRAP

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY	JAP			—	MS	EWB	AKA	
DATE	7/5/67			—	6/8/67	6/8/67	6-20-7	6/9/67
1	VDI							

PRIORITY: C
DRAWING TITLE: SUPPORT ASSY ASCENT STAGE-MIDSECTION-X277.00 EQUIP. LINES
DRAWING NO.: LDW280-10958
EO NO.: D1

ISSUED BY LIAISON, P. HUSTED, 6216 SECTION VDI GROUP NO. 335 PL 25

01 NAS 9-1100

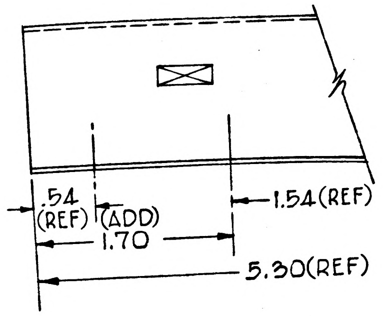
ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

*

DWG NO.	LDW280-10958	EO NO.	D2
CONTROL INFO NO.	LM-3-5714		

IN FLD (FOR-7 & -21)



DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG ☐

REASON FOR EO: DIMENSIONAL ERROR NOT IN ACCORD WITH LAYOUT.

DESCRIPTION OF EO: IN FLD (FOR-7 & -21) RELOCATE DIMENSIONAL LEADER TO BASE LINE.

GAEC EO RELEASE: B C 3

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOT REQD.	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP		
✓		NOT REQD			

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY	JAS			—	BM		WRB	
DATE	11/8/67			—	10-25-67	10-26-67	11/6/67	10-30-67
	VD1							

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
E3	SUPPORT ASSY. A/S, M/S, X277.00 EQUIPMENT LINES	LDW280-10958	D2

ISSUED BY LIAISON/ALEC HARVEY (X2151) 10-24-67 SECTION V.D.1. GROUP NO. 335 PL 25

01

NAS 9-1100

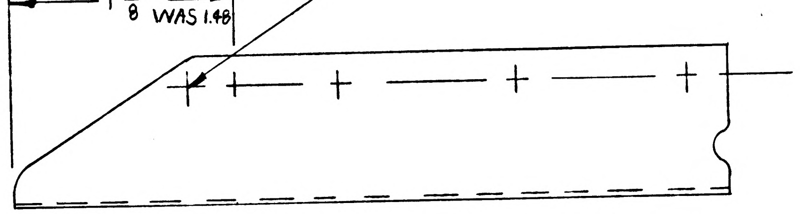
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW 280-10958
EO NO. 03
CONTROL INFO NO. LM-3-6248

(REWORK)
IF HOLE HAS BEEN DRILLED
FLUSH PLUG WITH AD RIVET STOCK



VIEW D-D -3

DETAIL SPEC REQ	☐	CL II ENGRG CHG	✓	CL I ENGRG CHG	☐

REASON FOR EO: EXISTING HOLE INTERFERES ON ASSEMBLY

DESCRIPTION OF EO: ON -3 HOLE MOVED TO 1 7/8 WAS 1.48

GAEC EO RELEASE

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM 9 (39)	
		THRU	
		LM 15 (45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG	RECORD EO	REWORK	SCRAP
✓		✓	

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GROUP~~
APPROVED BY					BM			
DATE	6/29/68				6-22-68	6-24-68	6/29/68	6/25/68

PRIORITY: C

DRAWING TITLE: SUPPORT ASSY ASCENT STAGE-MID SECTION -X 277.00 EQUIPMENT LINES

DRAWING NO.: LDW 280-10958

EO NO.: 03

ISSUED BY VPE / BILL HOLSTEN / V. BOLLO X 2151 MB SECTION VD1 GROUP NO. 280 PL 25

01
NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-54297	LEM-15(45)	1
		LEM-14(44)	
		LEM-13(43)	
		LEM-12(42)	
		LEM-11(41)	
		LEM-10(40)	
		LEM-9(39)	
		LEM-8(38)	
		LEM-7(37)	
		LEM-6(36)	
		LEM-5(35)	
	LDW280-54297	LEM-4(34)	
LEM	LDW280-53297	LEM-3(33)	1
PART NO.	LDW280-10959-9		
LEM	LDW280-23297	LTA-3(13)	1
LEM	LDW280-28297	LTA-8(18)	1
LEM	LDW280-51297	LEM-2(32)	1
LEM	LDW280-51297	LEM-1(31)	1
PART NO.	LDW280-10959-3		
LEM	LDW280-23297	LTA-3(13)	1
LEM	LDW280-53297	LEM-3(33)	1
LEM	LDW280-28297	LTA-8(18)	1
LEM	LDW280-51297	LEM-2(32)	1
LEM	LDW280-51297	LEM-1(31)	1
PART NO. LDW280-10959-1		GAEC SCH NO.	

C

LDW280-10959

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-54297	LEM-15(45)	1 EA
		LEM-14(44)	
		LEM-13(43)	
		LEM-12(42)	
		LEM-11(41)	
		LEM-10(40)	
		LEM-9(39)	
		LEM-8(38)	
		LEM-7(37)	
		LEM-6(36)	
		LEM-5(34)	
LEM	LDW280-54297	LEM-4(34)	1 EA
LEM	LDW280-23297	LTA-3(13)	1 EA
LEM	LDW280-53297	LEM-3(33)	1 EA
PART NO LDW280-10959-21		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28297	LTA-8(18)	1 EA
LEM	LDW280-51297	LEM-2(32)	1 EA
LEM	LDW280-51297	LEM-1(31)	1 EA
PART NO.	LDW280-10959-17,19		
LEM	LDW280-54297	LEM-15(45)	1 EA
		LEM-14(44)	
		LEM-13(43)	
		LEM-12(42)	
		LEM-11(41)	
		LEM-10(40)	
		LEM-9(39)	
		LEM-8(38)	
		LEM-7(37)	
		LEM-6(36)	
		LEM-5(35)	
LEM	LDW280-54297	LEM-4(34)	1 EA
LEM	LDW280-23297	LTA-3(13)	1 EA
LEM	LDW280-53297	LEM-3(33)	1 EA
LEM	LDW280-28297	LTA-8(18)	1 EA
LEM	LDW280-51297	LEM-2(32)	1 EA
LEM	LDW280-51297	LEM-1(31)	1 EA
PART NO. LDW280-10959-5		GAEC SCH NO. 324	

S

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	C	C	C	C
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED C-C

LAST DASH NO. USED -27

GRUMMAN REL INFO

PRIM NO. 215

LE(001) MP 14 2-11-10-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ± 1/32 ±.015 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY	A.RIHA 5-16-66	RELIABILITY	
LAYOUT BY	G.PELLEGRINO		
CHECKED BY	G.WHISTON 3-25-66		
GR LDR	R.V.PHILLIPS 3-25		
VEH DES INT	W.BISCHOFF 3-26		
STRUCTURE	F. BUNCE 3-31	PROJ ENGR	J.ALBER 4-4
STRUCTURE	HILDERMAN 3-31	REL GROUP	A.CARAMANICA 4-6
WEIGHTS	D.ROBESTCH 4-1		

B

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT ASSY
ASCENT STAGE MID SECTION
X 266.0 EQUIP LINES

SIZE B

CODE IDENT NO. 26512

LDW280-10959 C

SCALE NONE

SHEET 1.00 OF 4

ENG 77 1-12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
A		RE	T	RACED				NO CHAN	GE LAST REVISION NO CHANGE A. RIHA	16 MAY	1966				
		1,1.10							SH 1 OF 3 WAS SH 1 OF 4, ADDED SH 1.10				A. RIHA 16 MAY 66		
A	1	1.1.10, 2 & 3	8F 8D 8B 3E 3D					EOA1	IN FIELD: FOR -1, -3 & -5, NAS697A08 (WAS NAS697-832) FOR -19: 2.52 (WAS 2.62), 5.82 (WAS 5.92)						31 May
B	1	1,1.10,2&3	7B 4B				✓	Ⓡ E.O. B1	ADDED NOTE 4 IN FIELD & B/M: ADDED -21. EXTENDED EFF. OF -1 -3 & -5 TO LEM-3. FOR -1, -3, -5, -17 & -19: N/A ON LEM 1 & 2 LDW280-51297 (WAS LDW280-28297)	LTA-8(18) LEM-1(31)-2(32) LEM-3(33)	-5		P. KOCHLING 7-14-66		
	2	1,1.10						LE0280 119	FOR LDW280-10959-1, -3, -5, & -21 ADDED LTA-3(13) REQMT	LTA-3(13)	NOT	REQD			
	3	1.10 & 3	7D					E.O. B3	TRIMMED -3	NOTED	✓	RL			
C	1	1,1.10,2&3	7D					EO-C1	ADDED -27 & -9, ADDED SECT. C-C	LEM-1 THRU -3 LTA-3, LTA-8	✓		V. SIBILLA 8-17-66		
	2	1, 1.10					✓	LE0280-23	FOR -3, -5, -21 ADDED LEM-4 THRU -15 EFF. REQUIREMENTS.	LEM-4 THRU LEM-15	NOT	REQ'D.	GARY KORDES 9-6-66		
	3								REF. EOC1 REVISED SECTION C-C & FLANGE B RESTRICTED EFFECTIVITY OF -3 TO LTA-3, -8 & LEM-1 & -2.	NOT REQ'D	NOT	REQ'D RL		11/1/66	
	+	1.00 & 1.10						Ⓡ	ON-9 ADDED EFF LEM-4(34) THRU LEM-15(45), EFF WAS LEM-3(33)	NOTED	NOT	REQD	T.F PEDA 10-25-66	11-7-66	11/18/66

FOR CONTINUATION OF REVISIONS SEE SHEET

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10959	C
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01 NAS 9-1100

-9	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
5	1	5	6		NAS697A08	E	PLATE NUT	STD PART						
					MS20426AD3		RIVET	STD PART						
1					LDW280-10959-27		ZEE	AL ALLOY	QQ-A-250/4	2024-T3	.036×1⅞×5	NONE	88	8C
					LDW280-10959-21		ANGLE	AL. ALLOY EXTR.	QQ-A-200/11	7075-T6	DIE# 7154 ×2¼	CM	88	4B
					LDW280-10959-19		ANGLE	AL ALLOY	QQ-A-250/4	2024-T3	.036×1⅜×6⅛	NONE	88	3F
					-17		BRACKET		QQ-A-200/11	7075-T6511	DIE#89475× 2	T6		3C
	1				-15		ZEE		QQ-A-250/4	2024-T3	.036×1½×2⅜	NONE		7B
		1			-13		ZEE				.036×1⅞×5			8C
			1		-11		ZEE	AL ALLOY	QQ-A-250/4	2024-T3	.036×2⅛×8¾		88	6F
					-9		SUPPORT ASSY						NONE	7C
					-5		SUPPORT ASSY						NONE	7A
					-3		SUPPORT ASSY							7C
					LDW280-10959-1	E	SUPPORT ASSY					NONE	NONE	6E

QTY PER ASSEMBLY

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						58	ANODIZE	LSP14.9030
						T6	HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10959	C

SCALE NONE | SHEET 2.00

01

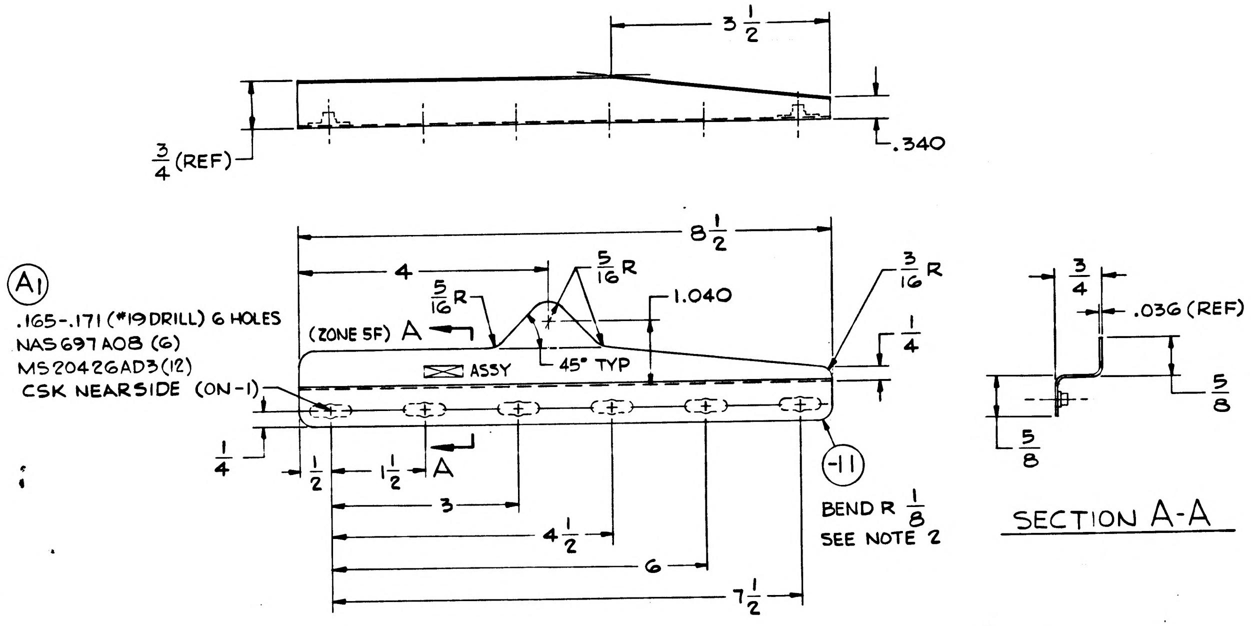
NAS 9-1100

LDW280-10959-21

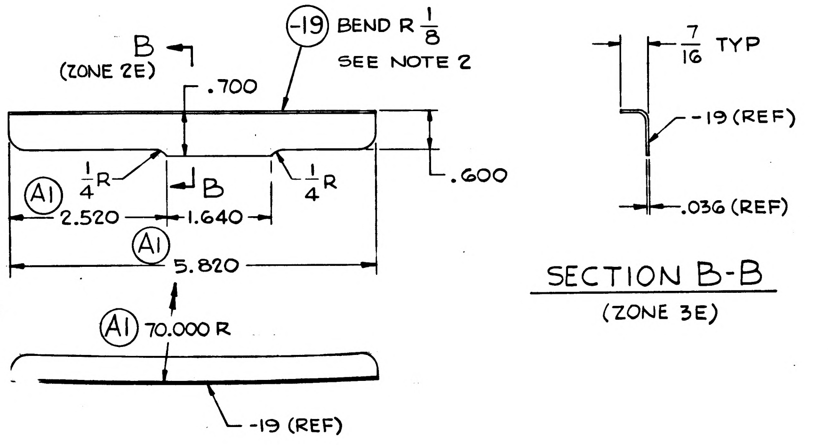
CHEM-MILL LINE TOLERANCE: ± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED) ± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040		
SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
⓵	.094 ±.005	.156(REF)
☐		
☐		

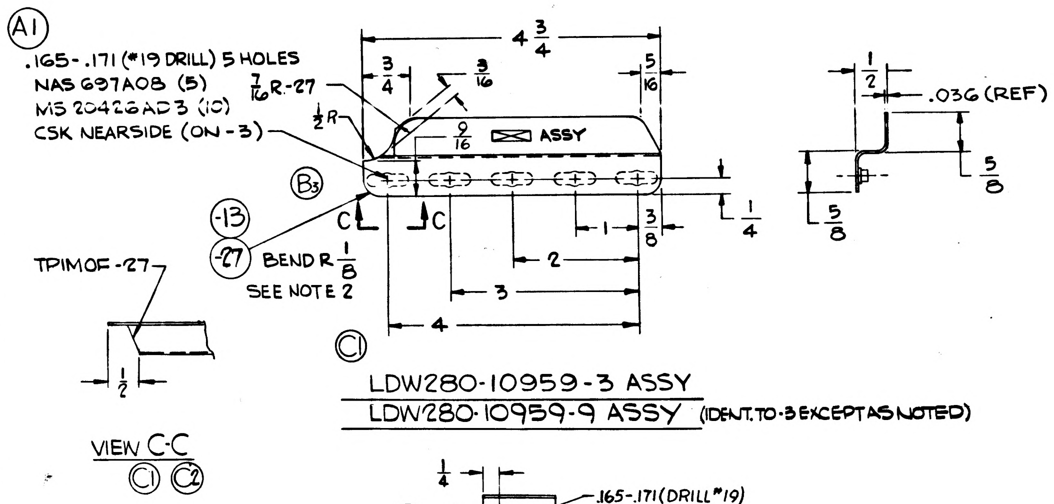
NOTES
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. CORNER TRIM RADII ON DETAIL PARTS OPTIONAL (1/4 MAX).
3. INSTALL FASTENERS PER LSP-14-15302.
4. FOR -21 OPTIONAL METHOD OF MANUFACTURE IS MACHINING.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	√
TOLERANCE ON LOFTED DELINEATIONS IS	

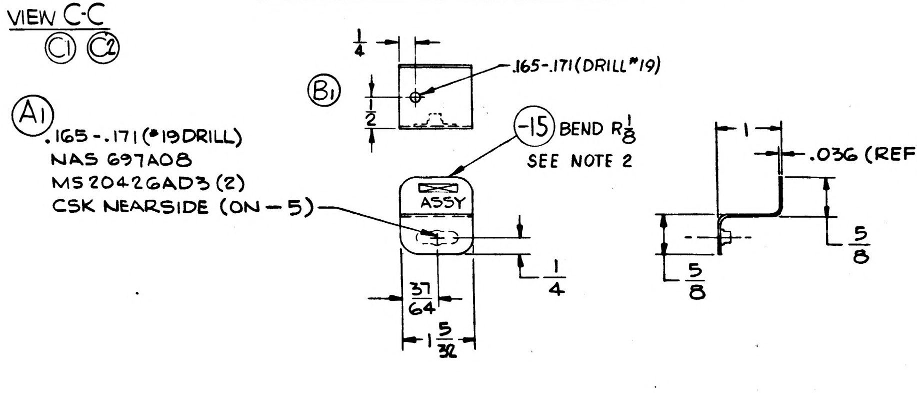

3 1/2
3/4 (REF)
.340
8 1/2
4
5/16 R
5/16 R
3/16 R
1.040
(ZONE 5F) A
ASSY
45° TYP
1/4
A1
.165-.171 (#19 DRILL) 6 HOLES
NAS697A08 (6)
MS20426AD3 (12)
CSK NEARSIDE (ON -1)
1/4
1/2
1 1/2
A
3
4 1/2
6
7 1/2
-11
BEND R 1/8
SEE NOTE 2
3/4
.036 (REF)
5/8
5/8
SECTION A-A

LDW280-10959-1 ASSY

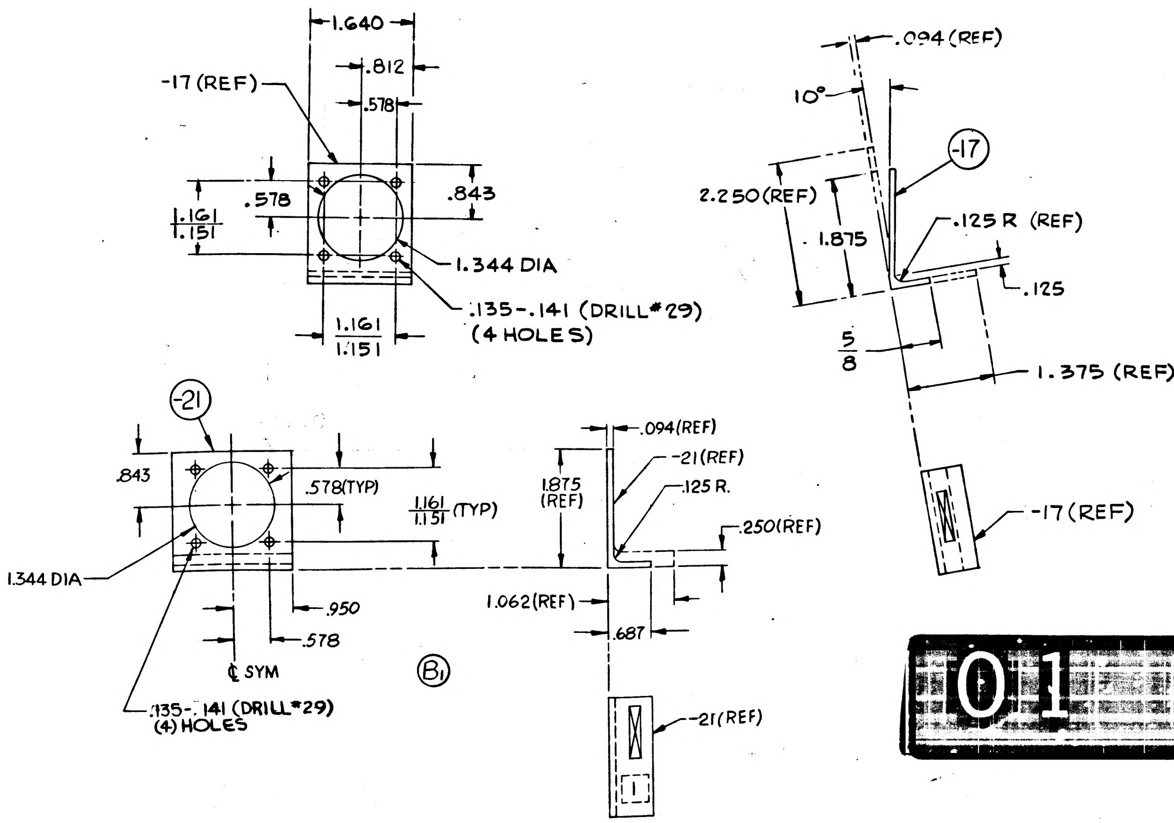

B
(ZONE 2E)
.700
-19 BEND R 1/8
SEE NOTE 2
.600
A1 1/4 R
B
1/4 R
2.520
1.640
A1
5.820
A1 70.000 R
-19 (REF)
7/16 TYP
-19 (REF)
.036 (REF)
SECTION B-B
(ZONE 3E)


A1
.165-.171 (#19 DRILL) 5 HOLES
NAS697A08 (5)
MS20426AD3 (10)
CSK NEARSIDE (ON -3)
4 3/4
3/4
7/16 R -27
1/2 R
3/16
9/16
5/16
ASSY
B3
C
C
-13
-27 BEND R 1/8
SEE NOTE 2
1
3/8
2
3
4
1/4
C1
1/2
.036 (REF)
5/8
5/8
TPIMOF-27
1/2
VIEW C-C
C1 C2

LDW280-10959-3 ASSY
LDW280-10959-9 ASSY (IDENT. TO -3 EXCEPT AS NOTED)


A1
.165-.171 (#19 DRILL)
NAS697A08
MS20426AD3 (2)
CSK NEARSIDE (ON -5)
1/4
B1
.165-.171 (DRILL #19)
1/2
-15 BEND R 1/8
SEE NOTE 2
ASSY
37/64
1 5/32
1/4
1
.036 (REF)
5/8
5/8

LDW280-10959-5 ASSY


1.640
.812
.578
-17 (REF)
.578
.843
.161
.151
1.344 DIA
.135-.141 (DRILL #29)
(4 HOLES)
1.161
1.151
.094 (REF)
10°
-17
2.250 (REF)
1.875
.125 R (REF)
.125
5/8
1.375 (REF)
-17 (REF)
-21
.843
.578 (TYP)
.161
.151 (TYP)
1.344 DIA
.950
.578
℄ SYM
.135-.141 (DRILL #29)
(4) HOLES
B1
.094 (REF)
-21 (REF)
1.875
(REF)
.125 R.
.250 (REF)
1.062 (REF)
.687
-21 (REF)

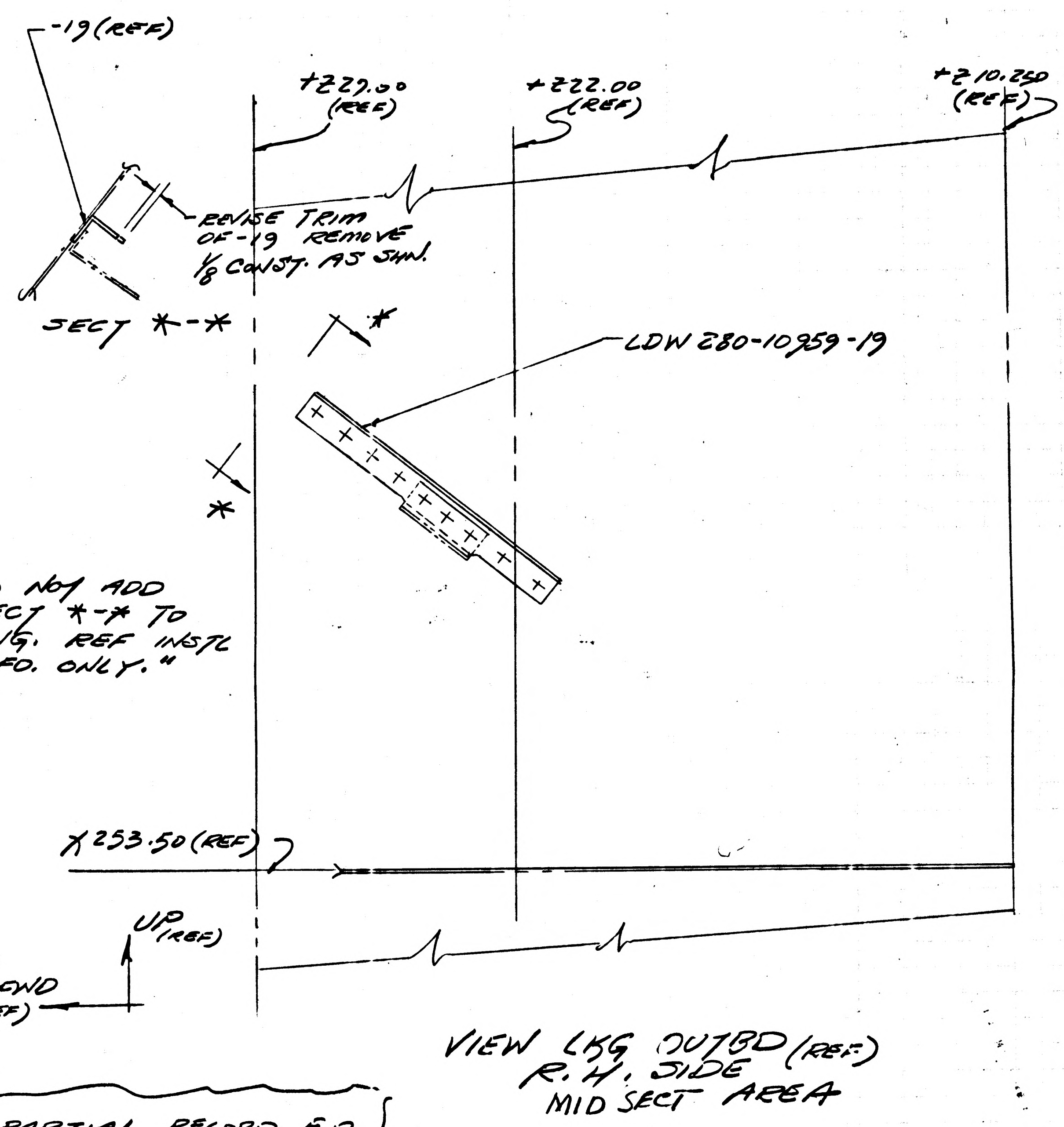
01 NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
	SIZE E	CODE IDENT NO. 26512	LDW280-10959	C
LEM MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

ENG 37.2 10-63

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER *

DWG. NO. LDW280-10959		EO NO. D1	
CONTROL INFO NO. LDW 280A-2908			



-19 (REF)
+Z27.00 (REF)
+Z22.00 (REF)
+Z10.250 (REF)
REVISE TRIM OF -19 REMOVE 1/8 CONST. AS SHN.
SECT *-*
*
*
LDW 280-10959-19
"DO NOT ADD SECT *-* TO DWG. REF INSTL INFO. ONLY."
X253.50 (REF)
UP (REF)
FWD (REF)

VIEW LKG OUTBD (REF)
R.H. SIDE
MID SECT AREA

PARTIAL RECORD E.O.
FOR LTA-8 & LTA-3
THIS REWORK NEED
NOT BE DONE ON
LTA-8 & LTA-3

PARTIAL
RECORD E.O.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ✓ CL I ENGRG CHG ☐

REASON FOR EO: CONNECTOR J-86 HITS STRUCT.

DESCRIPTION OF EO: REVISED TRIM OF -19 ADDED RECORD E.O. TO RECORD BLK FOR LTA-8 & LTA-3

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-1 & 2	
		(31) (32)	
		LTA-8 (18) LTA-3 (13)	

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
✓	✓	✓	

			RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
APPROVED BY				JN	CW		RMC (WR)	
DATE	11/1/66			11/1/66	11/1/66		11-1-66	11-1-66
/	.D1							

GAEC EO RELEASE: C 11-1

PRIORITY: C

DRAWING TITLE: SUPPORT ASSY A.S. M.S. EQUIP LINES

DRAWING NO.: LDW280-10959

EO NO.: D1

ISSUED BY N. NEILSEN -7033 11-1-66

GROUP EQ. LINES / VD1 GROUP 332 PL. 35

01 NAS 9-1100

ENG 32.2 REV 3-65

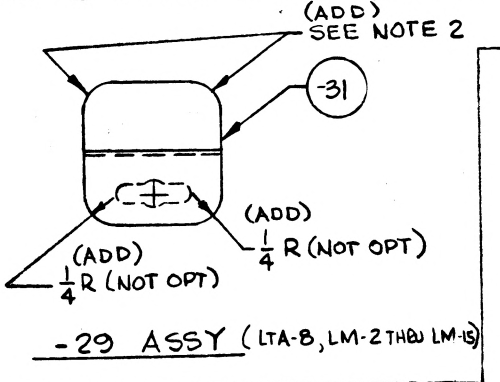
Ⓐ

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW 280-10959
EO NO. D2
CONTROL INFO NO. LM 5 - 13289

CREATE -29 & -31 IDENTICAL TO -5 & -15 RESPECTIVELY EXCEPT AS SHOWN BELOW

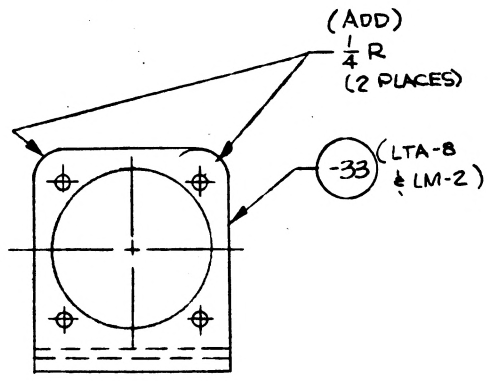
REMOVE -5 FROM LTA-8(18), LM-2(32) THRU LM-15(45)


(ADD)
SEE NOTE 2
-31
(ADD)
$\frac{1}{4}$ R (NOT OPT)
(ADD)
$\frac{1}{4}$ R (NOT OPT)

-29 ASSY (LTA-8, LM-2 THRU LM-15)

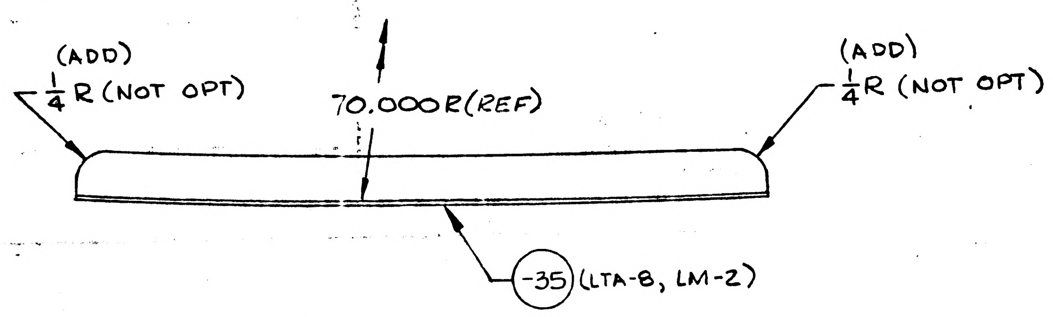
CREATE -33 IDENTICAL TO -17 EXCEPT AS SHOWN BELOW

REMOVE -17 FROM LTA-8(18) & LM-2 (32)


(ADD)
$\frac{1}{4}$ R
(2 PLACES)
-33
(LTA-8 & LM-2)

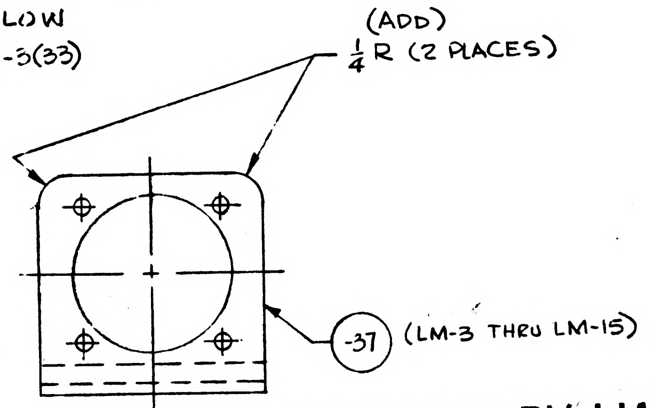
CREATE -35 IDENTICAL TO -19 EXCEPT AS SHOWN BELOW

REMOVE -19 FROM LTA-8(18) & LM-2(32)


(ADD)
$\frac{1}{4}$ R (NOT OPT)
70.000 R (REF)
(ADD)
$\frac{1}{4}$ R (NOT OPT)
-35
(LTA-8, LM-2)

CREATE -37 IDENTICAL TO -21 EXCEPT AS SHOWN BELOW

REMOVE -21 FROM LM-3(33) THRU LM-15(45)


(ADD)
$\frac{1}{4}$ R (2 PLACES)
-37
(LM-3 THRU LM-15)

RELEASED BY LIAISON

SHOP NOTE: EXISTING PARTS MAY BE REWORKED

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐ LCD-1552

REASON FOR EO: TO REMOVE PHYSICAL HAZARDS FROM THE CREW COMPARTMENT

DESCRIPTION OF EO:
CREATED -29, -31, -33, -35 & -37
REMOVED -5 FROM LTA-8, LM-2 THRU LM-15
REMOVED -17 & -19 FROM LTA-8 & LM-2
REMOVED -21 FROM LM-3 THRU LM-15

GAEC EO RELEASE: 5 JK

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8(18)	
		LM-2(32) THRU	
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY	WT			~			DAM	
DATE	6/1/67			~	5-18	5-18-67	5-24-67	5/18/67
1	VDI							

PRIORITY: C

DRAWING TITLE: SUPPORT ASSY ~ ASCENT STAGE MID-SECTION ~ X 266 EQUIP. LINES

DRAWING NO.: LDW 280-10959

EO NO.: D2

ISSUED BY W. TRAUT x6510 SECTION VDI GROUP NO. 335 PL 5

01
NAS 9-1100

C

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10959
EO NO. D3
CONTROL INFO NO. LM5-13554

REVISE EO D2 AS FOLLOWS:

FOR -29 EFFECTIVITY NOW LTA-8(18), LM-2(32) & LM-3(33)

WAS LTA-8(18), LM-2(32) THRU LM-15(45)

RELEASED BY LIAISON

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐

REASON FOR EO: PARTS REPLACED BY LDW280-11725-3 FOR LM-4 & SUBS.

DESCRIPTION OF EO: REF: EO D2 REMOVED LM-4(34) THRU LM-15(45) FOR -29

GAEC EO RELEASE: C

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM-4 (34)	
		THRU	
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
✓			✓

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY	WT			~		CH		
DATE	6/23/67			~	6/24-67	6-24-67	6/27	[illegible]/67

PRIORITY: C

DRAWING TITLE: SUPPORT ASSY ~ ASCENT STAGE MID-SECTION ~ X266 EQUIP. LINES

DRAWING NO. LDW280-10959

EO NO. D3

ISSUED BY W. TRAUT X86510 SECTION VDI GROUP NO. 335 PL 5

01

NAS 9-1100

-7	-6	-5	-3	-2	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
1	7	7	2	7	7		NAS697A08		PLATE NUT	STD PART						
							MS20426AD3		RIVET	STD PART						
1							LDW280-10960-25	E	ZEE	AL ALLOY SH	QQ-A-250/4	2024-T3	.036X2X3	NONE	88	
							LDW280-10960-23		CLIP	AL ALLOY EXTR	QQ-A-200/11	7075-T6	DIE#62226X1½	NONE	88	
							LDW280-10960-21		ANGLE	AL ALLOY EXTR	QQ-A-200/11	7075-T6511	DIE#62226X3	NONE	88	
							LDW280-10960-19		ANGLE	AL ALLOY EXTR	QQ-A-200/11	7075-T6511	DIE#62226X3¼	NONE	88	
							LDW280-10960-17		ANGLE	AL ALLOY SH	QQ-A-250/4	2024	[illegible] 1¾ x 1[illegible]	T42	88	
			1				LDW280-10960-13		ZEE	AL ALLOY SH	QQ-A-250/4	2024-T3	.036x1⅞x2⅝	NONE	88	
	1			1			LDW280-10960-12		ZEE	AL ALLOY SH	QQ-A-250/4	2024-T3	.036x1⅞x10⅛	NONE	88	
		1			1		LDW280-10960-11		ZEE	AL ALLOY SH	QQ-A-250/4	2024-T3	.036x1⅞x10⅛	NONE	88	
							LDW280-10960-7		SUPPORT ASSY					NONE	NONE	
							LDW280-10960-6		SUPPORT ASSY					NONE	NONE	
							LDW280-10960-5		SUPPORT ASSY					NONE	NONE	
							LDW280-10960-3		SUPPORT ASSY					NONE	NONE	
							LDW280-10960-2		SUPPORT ASSY					NONE	NONE	
							LDW280-10960-1	E	SUPPORT ASSY					NONE	NONE	

QTY PER ASSEMBLY

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T42	HEAT TREAT	MIL-H-6083

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10960	C

SCALE NONE

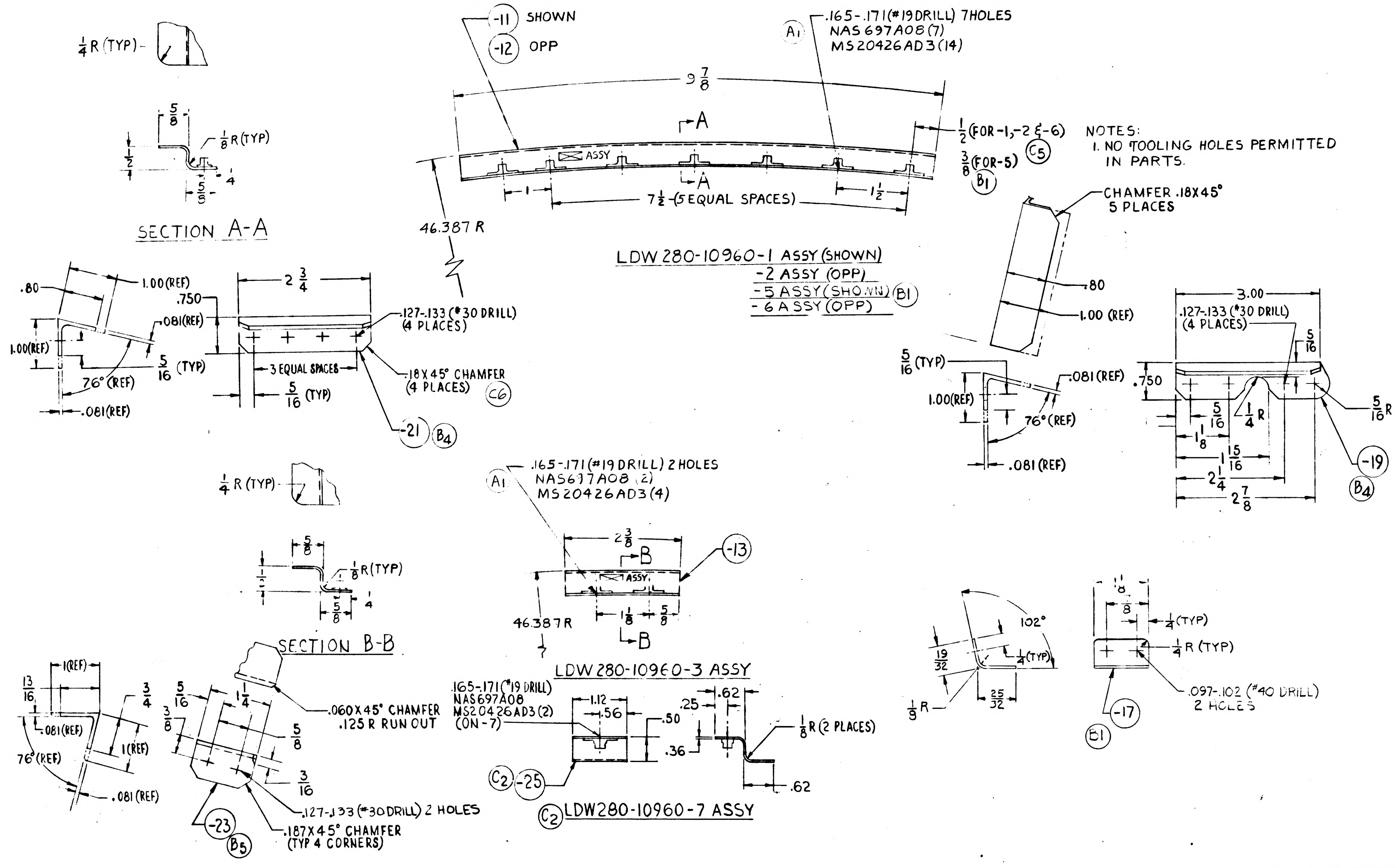
SHEET 2.00

©

ENG 77.2 7-65

01

NAS 9-1100



1/4 R (TYP)
5/8
1/8 R (TYP)
1/2
1/4
5/8
SECTION A-A
-11 SHOWN
-12 OPP
9 7/8
A
ASSY
1
7 1/2 -(5 EQUAL SPACES)
1 1/2
46.387 R
A1
.165-.171 (#19 DRILL) 7 HOLES
NAS 697A08 (7)
MS20426AD3 (14)
1/2 (FOR -1, -2 & -6) C5
3/8 (FOR -5) B1
LDW280-10960-1 ASSY (SHOWN)
-2 ASSY (OPP)
-5 ASSY (SHOWN) B1
-6 ASSY (OPP)
.80
1.00 (REF)
.750
.081 (REF)
1.00 (REF)
76° (REF)
5/16 (TYP)
.081 (REF)
2 3/4
.127-.133 (#30 DRILL) (4 PLACES)
3 EQUAL SPACES
5/16 (TYP)
.18 X 45° CHAMFER (4 PLACES) C6
-21 B4
CHAMFER .18X45° 5 PLACES
.80
1.00 (REF)
5/16 (TYP)
1.00 (REF)
.081 (REF)
76° (REF)
.081 (REF)
3.00
.127-.133 (#30 DRILL) (4 PLACES)
5/16
.750
5/16
1/4 R
1 1/8
1 15/16
2 1/4
2 7/8
5/16 R
-19 B4
1/4 R (TYP)
5/8
1/8 R (TYP)
1/2
1/4
5/8
SECTION B-B
A1
.165-.171 (#19 DRILL) 2 HOLES
NAS697A08 (2)
MS20426AD3 (4)
2 3/8
B
ASSY
-13
46.387 R
1 1/8
5/8
B
LDW280-10960-3 ASSY
13/16
1 (REF)
3/4
.081 (REF)
1 (REF)
76° (REF)
.081 (REF)
5/16
1 1/4
3/8
5/8
3/16
.060 X 45° CHAMFER .125 R RUN OUT
.127-.133 (#30 DRILL) 2 HOLES
.187 X 45° CHAMFER (TYP 4 CORNERS)
-23 B5
.165-.171 (#19 DRILL)
NAS697A08
MS20426AD3 (2)
(ON -7)
1.12
.56
.50
.25
.62
.36
1/8 R (2 PLACES)
.62
C2 -25
C2 LDW280-10960-7 ASSY
102°
19/32
1/4 (TYP)
25/32
1/8 R
1/8
3/8
1/4 (TYP)
1/4 R (TYP)
.097-.102 (#40 DRILL) 2 HOLES
-17
B1

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBEF STAMPPART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	D	26512	LDW280-10960	C

SCALE FULL
SHEET 3.00

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54297	LEM-15(45)	4
		LEM-14(44)	4
		LEM-13(43)	4
		LEM-12(42)	4
		LEM-11(41)	4
		LEM-10(40)	4
		LEM-9(39)	4
		LEM-8(38)	4
		LEM-7(37)	4
		LEM-6(36)	4
		LEM-5(35	4
	LDW280-54297	LEM-4(34)	5
	LDW280-23029	LM-15(45)	3
		LM-14(44)	3
		LM-13(43)	3
		LM-12(42)	3
		LM-11(41)	3
		LM-10(40)	3
		LM-9(39)	3
		LM-8(38)	3
		LM-7(37)	3
LM	LDW280-23029	LM-6(36)	3
PART NO. LDW 280-10960-7		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW340-56325	LEM-15(45)	1
		LEM-14(44)	1
		LEM-13(43)	1
		LEM-12(42)	1
		LEM-11(41)	1
		LEM-10(40)	1
		LEM-9(39)	1
		LEM-8(38)	1
		LEM-7(37)	1
	LDW340-56325	LEM-6(36)	1
	LDW340-54325	LEM-5(35)	1
	LDW340-54325	LEM-4(34)	1
	LDW280-53297	LEM-3(33)	1
LEM	LDW340-23325	LTA-3(13)	1
LDW280-10960-23			
LEM	LDW280-23297	LTA-3 (13)	1 EA
LEM	LDW280-53297	LEM-3 (33)	1 EA
LDW280-10960-5,-6			
LEM	LDW 280-53297	LEM-3(33)	1
LEM	LDW280-51297	LEM-2(32)	1
LEM	LDW280-51297	LEM-1(31)	1
LEM	LDW280-28297	LTA-8(18)	1
PART NO. LDW280-10960-3		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23297	LTA-3(13)	2
LDW280-10960-17			
LEM	LDW280-53297	LEM-3(33)	1 EA
LDW280-10960-19 & -21			
LEM	LDW280-51297	[illegible]	1
LEM	LDW280-51297	LEM-1(31)	1
LEM	LDW 280-[illegible]297	LTA-8([illegible]	1
LDW280-10960-2			
LEM	LDW280-23297	LTA-3(13)	1
LEM	LDW280-53297	LEM-3(33)	1
LEM	LDW280-51297	LEM-2(32)	2
LEM	LDW280-51297	LEM-1(31)	2
LEM	LDW280-28297	LTA-8(13)	2
PART NO. LDW280-10960-1		GAEC SCH NO. 32	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV	D	D	C	C						
SHEET		1.11								
REV		D								
SHEET										
REV										

LAST SECT LTR USED	B-B	GRUMMAN REL INFO	
LAST DASH NO. USED	-25	PRIM NO. 215	[illegible]

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.015 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	PELLEGRINO 3-24	RELIABILITY	
LAYOUT BY	PELLEGRINO 3-24		
CHECKED BY			
GP LEADER	R.PHILLIPS 3-25-66		
VEH DES INT	W.BISCHOFF 3-27		
STRUCTURES	F.E.B. BW 3-29	PROJ ENGR	J.ALBER RMC 3-30
STRUCTURES	HILDERMAN 3-29	REL GROUP	BOTTI 4-1-66
WEIGHTS	D.ROBESCH DJL 3-30		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT ASSY
ASCENT STAGE-MID SECTION-X244.00

SIZE B | CODE IDENT NO. 26512 | LDW280-10960 | D
SCALE NONE | SHEET 1.00 OF 5

ENG 77.1 9-64

THIS DWG SUPERSEDES LDW280-10960 NO CHANGE 3-21-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
									RETRACED NO CHG LAST REV NC, ADDED SH 1.10. SH 1.00 OF 4 WAS SH 1.00 OF 3.				L. BRIDA 5-14-66		
A	1	1.00, 1.10, 2.00, & 3.00					✓	EOA1	IN FIELD & B/M FOR -1,-2,& -3 NAS697A08 WAS NAS697-832	NOTED	-1,-2,&-3		WSG 6/3/66		
	2	1.00						Ⓑ	N/A FOR LEM-1, & LEM-2 WAS LDW280-28297						
B	1	1.00, 1.10, 2.00, 3.00					✓	E.O.B1	IN FIELD & B/M: ADDED -5 -6 & -17. EXTENDED EFF OF -1 & -3 TO LEM-3 FOR -1-2 & -3: N/A FOR LEM-1 & -2 LDW280-51297 (WAS LDW280-28297).	LEM-3	NOT	REQD	R. NISBET 5-8-67		
	2	1.10, 2.00 & 3.00						E.C.B2	IN FLD. & B/M ON-2 REVISED-12 & ADDED VIEW J-J	LTA-8, LEM-1,-2,-3	✓				
	3	1.00 & 1.10						LEO 280-119	FOR LDW280-10960-1,-5,-6 & -17 ADDED LTA-3 (13) REQUREMENTS	LTA-3	NOT	REQD			
	4	1.00, 1.10, 2.00 & 3.00					✓	E.O.B4	IN FLD & B/M: ADDED -19 & -21 (1 EA. REQD). IN MODEL BLOCK DELETED -17 FROM LEM-3 ONLY N/A LDW280-53297 (TYP.)	LEM-3		-17			
	5	1.00, 1.10, 2.00 & 3.00						E.O.B5	IN FLD. & B/M & M/B ADDED -23 CLIP FOR LTA-3 (13) & LEM-3 (33) THRU -6 (36)	LTA-3 & LEM-3 THRU -6	✓				
C	1	1.10, 2.00 & 3.00						E.O.C1	CANCELLED E.O.B2	LTA-8, LEM-1,-2 & -3	✓				
	2	1.00, 1.10, 2.00 & 3.00					✓	E.O.C2	IN FLD & B/M ADDED -7 & -25	LEM-4 THRU LEM-15	NOT	REQD			
	3	1.00 & 1.10						E.O.C3	(REF. E.O.B5) N/A FOR LTA-3 (13), LEM-4 (34) THRU -6 (36) LDW340-23325 WAS LDW280-23325	NOT REQD	NOT	REQD			
	4						✓	LEO 280-515	FOR -23 ADDED LM-7 (37) THRU LM-15 (45) EFFECTIVITIES	LM-7 THRU -15	NOT	REQD			
	5	1.10 & 3.00							ON-6 REVISED-12 THE SAME AS ON-2 DWG ERROR CORRECTION.	NOT REQD	NOT	REQD			
	6	1.10 & 3.00						E+C	REF. E.O. B4 ON-21 ANGLE ".18 X 45° CHAMFER 2 PLACES" SHOULD BE 4 PLACES TO AGREE WITH VIEW, DWG ERROR CORRECTION.	NOT REQD	NOT	REQD	J.G.		
D	1	1.00, 1.10			✓			E.O. D1	ON-23 REMOVED N/A LDW340-23325 EFFECTIVE LM-4 THRU LM-15.	LM-4 THRU LM-15	NOT	REQD	P. LENZ 10-18-68		BC
	2	1.00, 1.10		T		✓		E.O. D2 LCD 2011 CCA 668	IN M/B FOR -23 ADDED LM-4 THRU LM-15 EFFECTIVITY.						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10960	D
SCALE NONE			SHEET 1.10

Ⓓ

ENG 77.3 5-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
D	3	1.00, 1.11		A		✓		E.O. D3, LCD 2011 CCA 668	FOR -7, QUANTITY (4) REQ'D FOR LM-5(35) THRU LM-15 (45) (WAS QUANTITY (5) REQ'D). ADDED SH. 1.11	LM-5 THRU LM-15		✓	P. LENZ 10-18-68	BC 10-18-68	
	4	1.00, 1.11		C		✓		E.O. D4 LCD 3160	ON -7, ADDED N/A LDW280-23029, EFF. LM-6(36) THRU LM-15(45).	LM-6 THRU LM-15	✓				
	5	1.00, 1.11				✓		E.O. D5, LCD 2011 CCA 668-3	ON-23, N/A LDW340-56325(1) WAS LDW340-54325(1) FOR LM-6 THRU LM-15.	LM-6 THRU LM-15	NOT	REQ'D			

CHG APPROVED LTR	GROUP LDR	VEH DES INT	STRUCT	STRUCT	WEIGHTS	RELIABILITY
D						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10960	D

SCALE NONE SHEET 1.11

ENG 77.16 3-66

01

NAS 9-1100

LDW280-10961

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23296	LEM-6(36)	1EA
LEM	LDW280-23296	LEM-5(35)	1EA
LEM	LDW280-23296	LEM-4(34)	1EA
LEM	LDW280-23296	LEM-3(33)	1EA
LEM	LDW280-23296	LEM-2(32)	1EA
LEM	LDW280-23296	LEM-1(31)	1EA
LEM	LDW280-23296	LTA-8(18)	1EA
LEM	LDW280-23296	LTA-3(13)	1EA
PART NO. LDW280-10961-11,-12 -13 & -14		GAEC SCH NO. 32-2	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00						
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO			
LAST DASH NO. USED	-15	PRIM NO. 215	LE(001) MP12		RS 3-31

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	SUPPA 3-19-66		
LAYOUT BY	FISCH		
CHECKED BY	WCG 3/24/66		
GR LEADER	Whitley 3/26/66		
VEH DES INT	[illegible] 4/22		
STRUCTURES	[illegible] 3/31	PROJ ENGR	[illegible] 4-4-66
STRUCTURES	HILDERMAN 3/31	REL GROUP	G. [illegible] 4-5
WEIGHTS	[illegible] 4-4		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ZEE
ASCENT STAGE-MID SECT-(S-BAND STEERABLE ANTENNA)-Z 0.00

SIZE	CODE IDENT NO.	
B	26512	LDW280-10961
SCALE	NONE	SHEET 1.00 OF 3

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10961-15	E	PLATE	AL ALLOY SH	QQ-A-283	7075-T6	.050 x 2 1/4 x 4 1/8	NONE	88	
		LDW280-10961-14	E	ZEE	AL ALLOY SH	QQ-A-283	7075	.050 x 3 x 15 1/2	T6	88	
		-13	↕	ZEE	↕	↕	↕	.050 x 3 x 15 1/2	↕	↕	
		-12	↕	ZEE	↕	↕	↕	.050 x 3 1/2 x 14	↕	↕	
		LDW280-10961-11	E	ZEE	AL ALLOY SH	QQ-A-283	7075	.050 x 3 1/2 x 14	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	AL HEAT TREAT	MIL-H-6088
88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B | CODE IDENT NO. 26512 | LDW280-10961

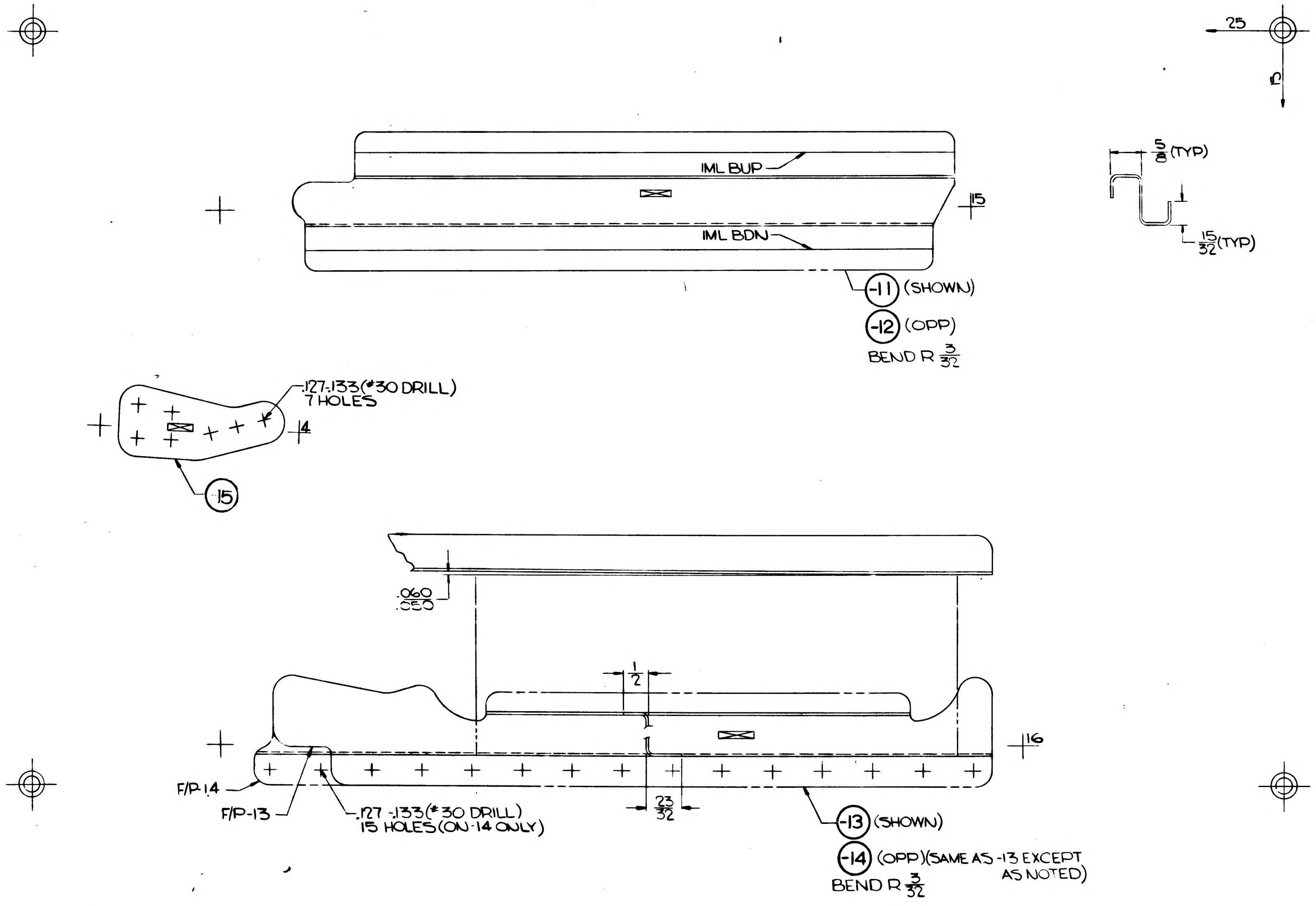
SCALE NONE | SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTE
1-NO TOOLING HOLES PERMITTED IN PARTS



25
10
IML BUP
IML BDN
15
5/8 (TYP)
15/32 (TYP)
-11 (SHOWN)
-12 (OPP)
BEND R 3/32
.127-.133 (#30 DRILL)
7 HOLES
14
15
.060
.050
1/2
16
F/P-14
F/P-13
.127-.133 (#30 DRILL)
15 HOLES (ON -14 ONLY)
23/32
-13 (SHOWN)
-14 (OPP) (SAME AS -13 EXCEPT AS NOTED)
BEND R 3/32

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OF SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

R GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
LEM	SIZE D	CODE IDENT NO. 26512	LDW280-10961
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

2 FOR PHOTO REPRODUCTION 1

K2

01

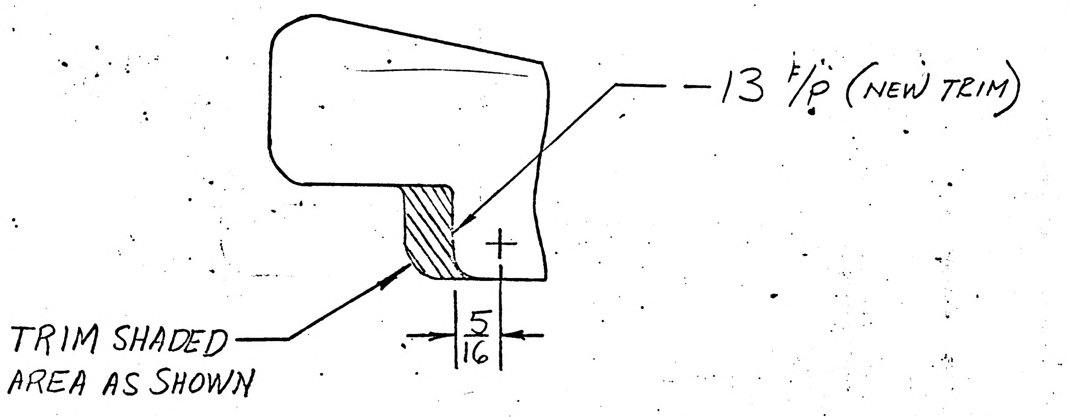
NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10961 | EO NO. A2
CONTROL INFO NO. LEM-3-3406

IN FIELD ZONE 7A



DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		3

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
INTERFERENCE ON N/A LDW280-23296	IN FIELD TRIMMED-13	X FS 8-2-66

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA-8(18)	-3(13)
		LEM-1(31) THRU-6(36)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY				—	BM		RMC (E)	
✓		✓		DATE	8/			—	6-29-66	6-29-66	8-24	7-1-66
REVISE DWG	RECORD EO	REWORK	SCRAP	6-29-66	V01	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C3	ZEE A/S M/S S-BAND STEERABLE ANTENNA ~ Z000	LDW280-10961	A2

ISSUED BY LIAISON / TARTAMELLA (X2151) ~B SECTION VDI PHILLIPS GROUP NO. 335 PL 35

23 GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER
*

DWG. NO. LE0280
EO NO. 295
CONTROL INFO NO. LDW280A0657

ENG 23.2 REV 2-64

*TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4 34

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10789	A3	SEE DRAWING
-10790	B1	
H 10792	C1	
-10796	A1	
-10798	B1	
-10800	B2	
H 10801	A1	
H 10802	B1	
H 10804	B1	
-10806	C1	
-10808	A1	
P 10809	B2	
-10811	B2	
-10813	B1	
-10814	B1	
-10815	A4	
-10817	A1	
-10838	B1	
-10846	C1	
-10927	B1	
-10934	A1	
-10953	B1	
-10954	A1	
-10955	A1	
-10961	A3	
P 10966	A4	
-10970	A1	
-10973	A1	
-10974	A1	
-10976	A1	
-10977	A1	
-10979	A1	
LDW280-10980	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL III ENGRG CHG ☐ CL I ENGRG CH. ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE C: LE 108

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONT'R UNIT NO.
LEM		LEM-7(37) LEM-8(38) LEM-9(39)	
LEM		LEM-10(40) LEM-11(41) LEM-12(42)	
LEM		LEM-13(43) LEM-14(44) LEM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D

APPROVED BY: RP
DATE: 9/23/66
VDI

SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
		—	AW		RM C WR	AC
		—	9.21		10-6-66	10-3-66

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LE0280
EO NO.: 295

ISSUED BY: L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO 282 PL 55

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NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 1210
CONTROL INFO NO. LDW280B6151

TO THE FOLLOWING *DASH Nº.S OF DWGS LISTED ADD TO M/B TEST (75).

DWG Nº	TITLE	DASH *	QUANTITY	N/A **	E.O. #
LDW280-10961	ZEE A/S-M/S (S-BAND STEERABLE ANT.)	-13 & -14	1 EA	LSK280-11193	A4
LDW280-11067	BRACKET A/S-M/S X310.5 DECK	-11 & -13	1 EA	LSK280-11193	C1

DETAIL SPEC REQ ☐
CL II ENGRG CHG ☐
CL I ENGRG CHG ✓
LCD 3420 CCA 1560 [illegible] #1

REASON FOR EO: CERTIFICATION OF DOCKING TUNNEL COMPONENT STRUCTURE FOR DROGUE LOADS

DESCRIPTION OF EO: IN * MOD BLOCK ADDED TEST (75) N/A **

~~TEST (75)~~

GAEC EO RELEASE: 11/11/68

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		TEST (75)	

DRAWING CHANGE REQD: REVISE DWG — ; RECORD EO
DISPOSITION OF PARTS: REWORK NOT ; SCRAP REQ'D

APPROVED BY		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
	[illegible]			FDR/gn	CW		[illegible]	[illegible]
DATE	11/7/68			11/7/68	11/7/68		11/7/68	11/11/68
	VDI							

PRIORITY: C
DRAWING TITLE: SEE ABOVE
DRAWING NO.: LEO 280
EO NO.: 1210

11-5-68
ISSUED BY P. WEISSLITZ x86048 SECTION VDI GROUP NO. 335 PL 25

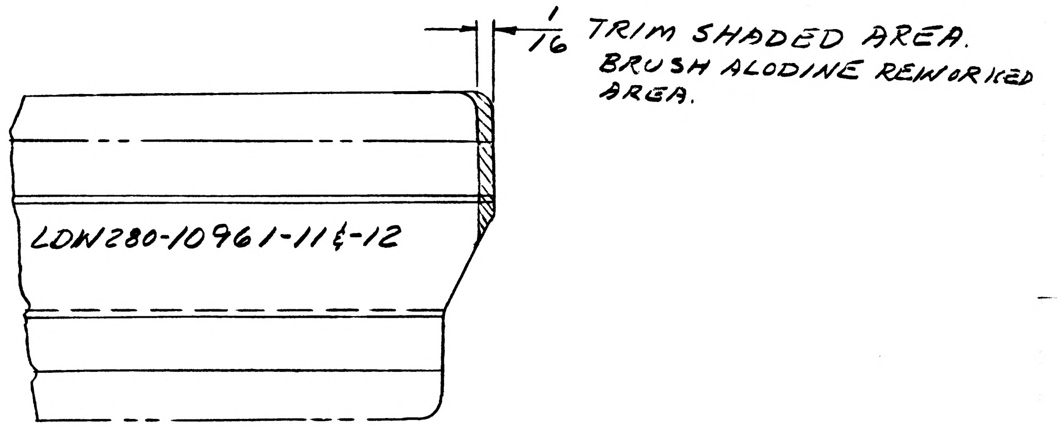
01
NAS 9-1100

1809

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW280-10961 EO NO. A5
CONTROL INFO NO. LM-5-22263



DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 1809	(5)

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
TO PROVIDE CLEARANCE FOR ANTENNA FITTING.	TRIMMED LDW280-10961-11 & -12.	R K 2/26/70

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM-9 (39)	
		THRU	
		LM-14 (44)	

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
✓		✓	

APPROVED BY	PBT			W	DV	CR	PBT	[illegible]
DATE	2-24-70			2/9/70	2/16/70	2-16-70	2-24-70	2/27/70
2-16-70	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	ZEE A.S.-M.S.-S BAND ANT. -20.00	LDW280-10961	A5

ISSUED BY LIAISON J. JARVIS SECTION V.D.I. GROUP NO. 335 PL 25

98

01

NAS 9-1100

LDW280-10963

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28051	LEM-2(32)	2
LEM	LDW280-28051	LEM-1(31)	2
LEM	LDW280-28051	LTA-8(18)	2
PART NO. LDW280-10963-9		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28051	LEM-2(32)	1 EA
LEM	LDW280-28051	LEM-1(31)	1 EA
LEM	LDW280-28051	LTA-8(18)	1 EA
PART NO. LDW280-10963-1,-2,-3,-5 & -7		GAEC SCH NO. 31-3	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A
LAST DASH NO. USED	-9	PRIM NO. 215 / LE(001) M2-A / 8-7-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	S.BRASWELL 3/22/66
LAYOUT BY	J.CALANDRA 3/23/66
CHECKED BY	
GR. LEADER	J.PUSATERI 3/22/66
VEH DES INT	W.BISCHOFF 3/23/66
STRUCTURES	B.W. 4/4/66
STRUCTURES	R.HILDERMAN 4/5/66
WEIGHTS	D.ROBESCH 4/6/66
PROJ ENGR	A.CARAMANICA 4/12/66
REL GROUP	J.ALBER 4/11/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET ASSEMBLY
ASCENT STAGE ~ CABIN
EQUIPMENT LINES

SIZE B | CODE IDENT NO. 26512 | LDW280-10963 | A
SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

THIS DWG ↑ SUPERSEDES LDW280-10963 "NO CHANGE" 7/27/66

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED~NO CHANGE~ LAST REV NO CHANGE SH 1.00 OF 4 WAS SH 1 OF 1	HERB. SCHWETER 7-27-66				RMC	
A	1	1.10 3.00						EO A1	IN FLD ON -1 ASSY (SHN), -2 ASSY (OPP) 5/16 R (2 PLACES) WAS 5/32 R (2 PLACES)	NOTED	✓		H. SCHWETER 7-27-66		
	2	1.10 2.00 3.00						EO A2	ON -1 & -2 TRIMMED ASSY 7¼ WAS 8⅝. ADDED NAS697A08 (2), MS20426AD3 (4) & MS20470AD3 (1) EG		✓				

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10963	A
SCALE NONE			SHEET 1.10

01

NAS 9-1100

-9	-7	-5	-3	-2	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
				2	2		NAS697A08	E	PLATE NUT	STD PART						
							MS2070AD3		RIVET							
							MS20426-AD3			STD PART						
5	5	3	3	3	3		GR500A-4C		RIVET	GRUMMAN STD						
1							LDW280-10963-29		GANG CHANNEL	NAS-688P-6-10	STD PART		LENGTH = 7⅙			
	1						-27			-6-14			= 10⅞			
				1	1		-25			-6-2			= 1 9/16			
				1	1		-23			-6-4			= 3			
		1	1				LDW280-10963-21		GANG CHANNEL	NAS-688P-6-6	STD PART		LENGTH = 4 7/16			
1							LDW280-10963-19		ZEE	AL ALY SH	QQ-A-250/4	2024	.040 × 3 1/8 × 8 1/2	T3/42	88	
	1						-17					2024-T3	.040 × 3 1/8 × 11 1/4	NONE		
		1					-15					2024-T3	.040 × 2 9/16 × 5 1/2	NONE		
			1				-13					2024-T3	.040 × 2 9/16 × 5 3/4	NONE		
				1			-12					2024	.040 × 2 9/16 × 8 1/2	T3/42		
					1		LDW280-10963-11		ZEE	AL ALY SH	QQ-A-250/4	2024	.040 × 2 9/16 × 8 1/2	T3/42	88	
							LDW280-10963-9		BRACKET ASSY					NONE	NONE	
							-7									
							-5									
							-3									
							-2									
							LDW280-10963-1	E	BRACKET ASSY					NONE	NONE	

QTY PER ASSEMBLY

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-3030
						T3/42	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

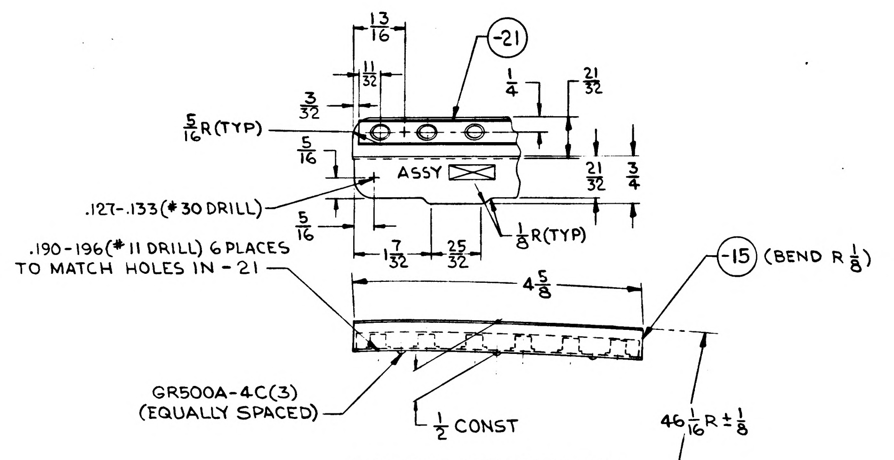
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10963	A

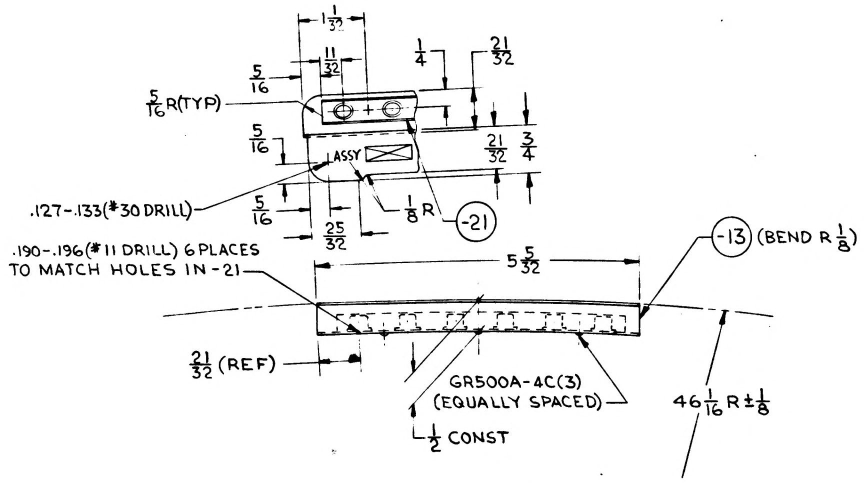
SCALE NONE SHEET 2.00

ENG 77.2 7-65

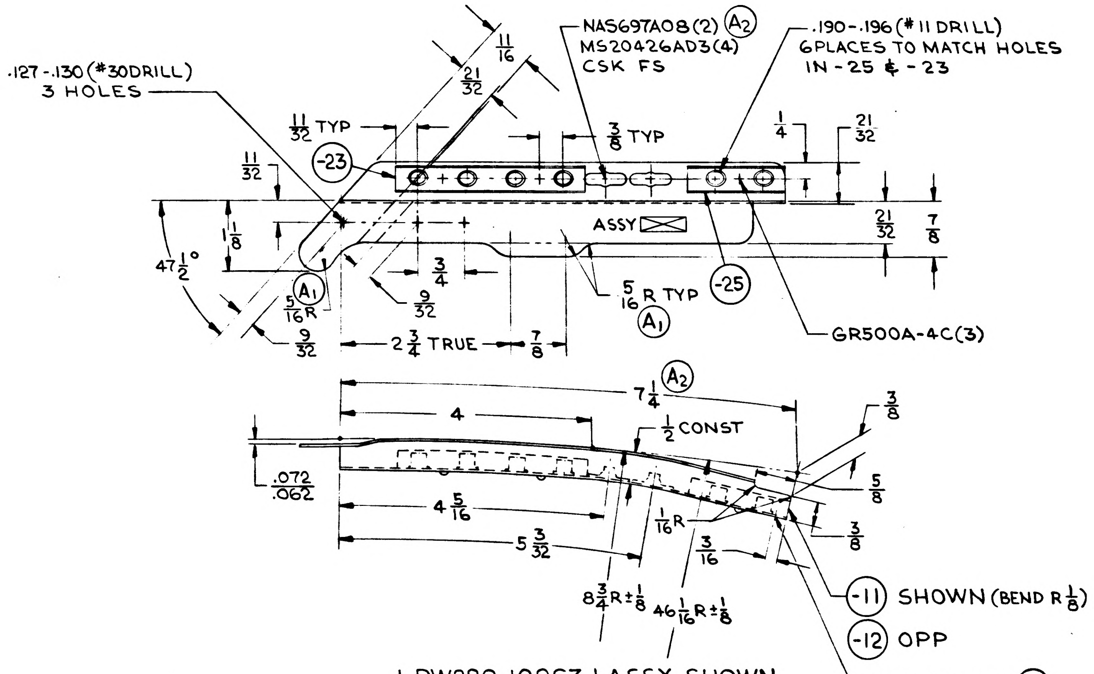
01 NAS 9-1100


-21
13/16
11/32
1/4
21/32
3/32
5/16 R(TYP)
5/16
ASSY
21/32
3/4
.127-.133(#30 DRILL)
5/16
7/32
25/32
1/8 R(TYP)
.190-.196(#11 DRILL) 6 PLACES
TO MATCH HOLES IN -21
4 5/8
-15 (BEND R 1/8)
GR500A-4C(3)
(EQUALLY SPACED)
1/2 CONST
46 1/16 R ± 1/8

LDW280-10963-5ASSY


1 1/32
11/32
1/4
21/32
5/16
5/16 R(TYP)
5/16
ASSY
21/32
3/4
.127-.133(#30 DRILL)
5/16
25/32
1/8 R
-21
.190-.196(#11 DRILL) 6 PLACES
TO MATCH HOLES IN -21
5 5/32
-13 (BEND R 1/8)
21/32 (REF)
GR500A-4C(3)
(EQUALLY SPACED)
46 1/16 R ± 1/8
1/2 CONST

LDW280-10963-3ASSY

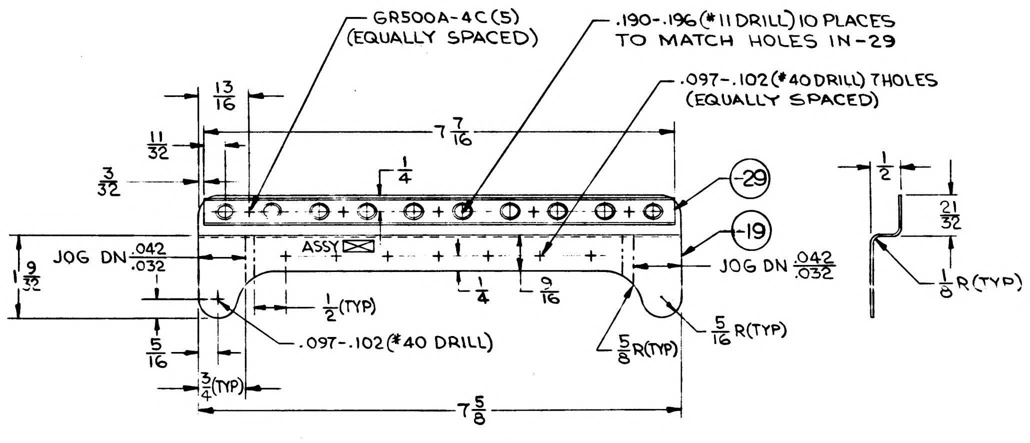

.127-.130(#30DRILL)
3 HOLES
11/16
21/32
NAS697A08(2) A2
MS20426AD3(4)
CSK FS
.190-.196(#11 DRILL)
6PLACES TO MATCH HOLES
IN -25 & -23
11/32 TYP
3/8 TYP
1/4
21/32
-23
11/32
ASSY
21/32
7/8
1 1/8
47 1/2°
A1
5/16 R
3/4
9/32
5/16 R TYP
A1
-25
9/32
2 3/4 TRUE
7/8
GR500A-4C(3)
7 1/4 A2
4
1/2 CONST
3/8
.072
.062
4 5/16
5/8
1/16 R
5 3/32
3/8
3/16
8 3/4 R ± 1/8
46 1/16 R ± 1/8
-11 SHOWN (BEND R 1/8)
-12 OPP
MS20470AD3 A2

LDW280-10963-1 ASSY SHOWN
-2ASSY OPP

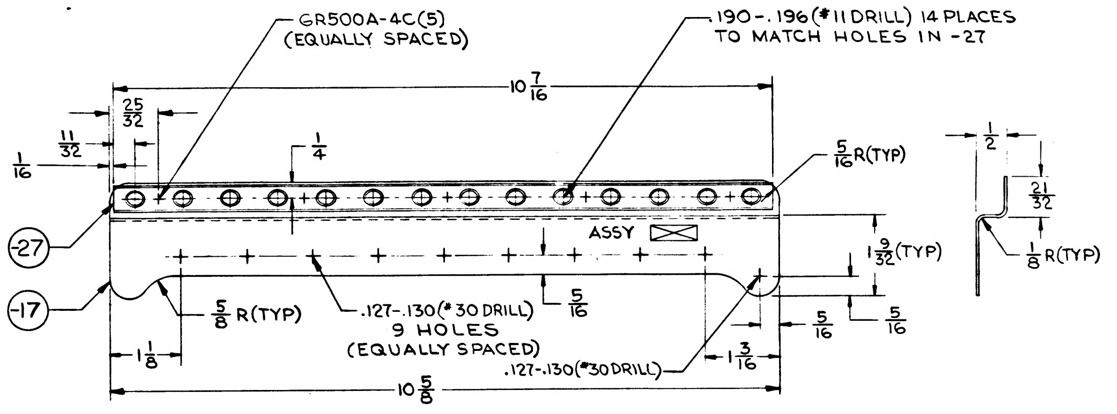
NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. INSTALL FASTENERS PER LSP 14-15302 & 15303.

NAS 9-1100


GR500A-4C(5)
(EQUALLY SPACED)
.190-.196(#11 DRILL) 10 PLACES
TO MATCH HOLES IN -29
.097-.102(#40 DRILL) 7 HOLES
(EQUALLY SPACED)
13/16
7 7/16
11/32
1/4
3/32
-29
-19
1/2
21/32
ASSY
JOG DN .042/.032
1 9/32
JOG DN .042/.032
1/4
9/16
1/8 R(TYP)
1/2 (TYP)
5/16
.097-.102(#40 DRILL)
5/8 R(TYP)
5/16 R(TYP)
3/4 (TYP)
7 5/8

LDW280-10963-9ASSY


GR500A-4C(5)
(EQUALLY SPACED)
.190-.196(#11 DRILL) 14 PLACES
TO MATCH HOLES IN -27
25/32
10 7/16
11/32
1/4
1/16
5/16 R(TYP)
1/2
21/32
ASSY
1 9/32 (TYP)
1/8 R(TYP)
-27
-17
5/8 R(TYP)
.127-.130(#30 DRILL)
9 HOLES
(EQUALLY SPACED)
5/16
5/16
5/16
.127-.130(#30DRILL)
1 1/8
1 3/16
10 5/8

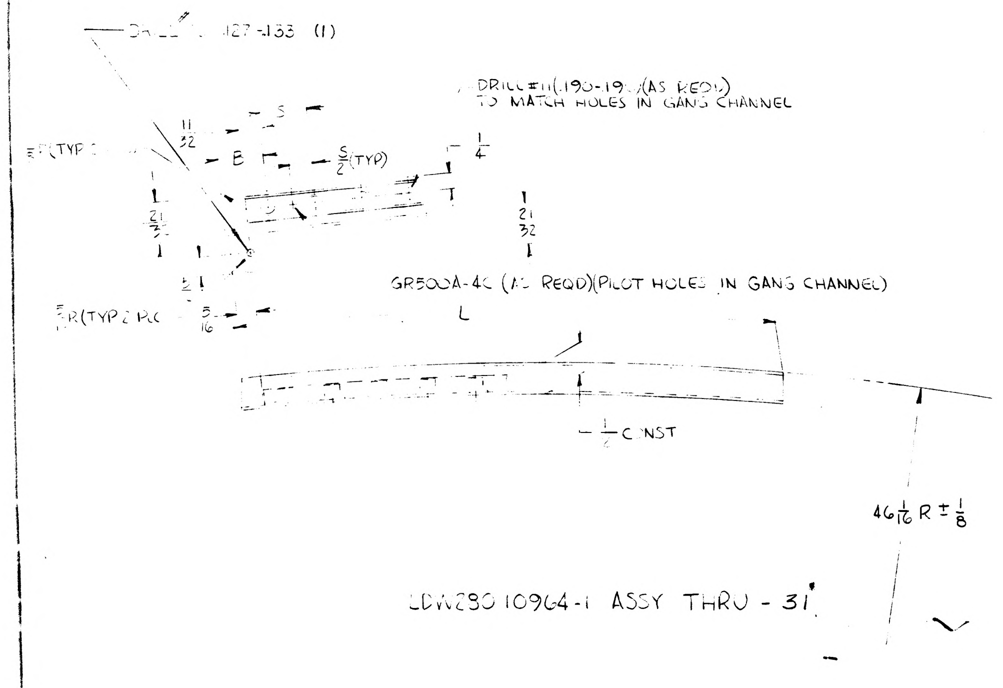
LDW280-10963-7 ASSY

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE EDGE DISTANCE IS 1½ FASTENER DIA FROM FASTENER ℄	√
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	√
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

LEM	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
	SIZE E	CODE IDENT NO. 26512	LDW280-10963	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

LDW280-10963 A


DRILL # .127-.133 (1)
DRILL #11(.190-.19)(AS REQD) TO MATCH HOLES IN GANG CHANNEL
11/32
S
R(TYP 2 PL)
B
S/2(TYP)
1/4
21/32
21/32
R(TYP 2 PLC)
5/16
GR500A-4C (AS REQD)(PILOT HOLES IN GANG CHANNEL)
L
1/4 CONST
46 1/16 R ± 1/8

LDW280-10964-1 ASSY THRU -31

A)

ASSEMBLY NO	NO REQ MOD	ZEE NO	GANG CHANNEL NO	L	GANG CHANNEL MAKE FROM	B	NO OF RIVETS/ASSY	TH. ZEE	MATL ZEE	BR ZEE
LDW280-10964-1	1	LDW280-10964-41	LDW280-10964-81	8 3/4	NAS688P-6-11	19/32	6	.040	AL ALY 2024-T3 QQA-355	1/8 R
-3	2	-43	-83	2 5/8	NAS688P-6-3	17/32	2			
-5	1	-45	-95	5 3/16	NAS688P-6-6	23/32	3			
-7	1	-47	-87	7 1/8	NAS688P-6-9	17/32	6			
-9	1	-49	-55	5 1/4	NAS688P-6-7	3/8	4			
-11	1	-51	-55	5 7/8	NAS688P-6-7	5/8	4			
-13	1	-53	-89	3 5/16	NAS688P-6-4	17/32	2			
-15	1	-55	-91	1 7/8	NAS688P-5-3	5/16	2			
-17	4	-57	-93	1 1/16	NAS688P-5-3	3/8	2			
-21	1	-61	-53	2 3/8	NAS688P-6-3	3/8	2			
-23		-63	-55	5 3/8	NAS688P-6-7	7/16	4			
-25		-65	-55	4 1/8	NAS688P-6-5	9/16	3			
-27	2	-67	-59	3 1/32	NAS688P-6-4	1/2	2			
-29	1	-69	-55	5 1/2	NAS688P-6-7	1/2	4			
-31	3	[illegible]	[illegible]	3 7/8	NAS688P-6-5	3/8	3	.040	AL ALY 2024-T3 QQA-355	1/8 R

A) A)

NOTES.
A) 1. INSTALL FASTENERS PER LSP14-15303

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	~~G. S. S.~~	LSP-14-9030

RECORD E. O.'s		
MODEL	E O NUMBER	MODULE NO.

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

MANUFACTURING OPERATIONS

NOTES CHECKED ✓ APPLY TO THIS DWG.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.	
200 FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
RUBBER STAMP PART NUMBER ~~AND ALL OTHER MARKINGS~~ ~~IN REGION MARKED~~ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
INSPECTION INFORMATION MINIMUM PERMISSIBLE ~~AVERAGE~~ EDGE DISTANCE ~~MARKED~~ IS 1 1/2 FASTENER DIA	
SYMBOL ∱ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓

REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY / DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER	REVISIONS DESCRIPTION

3 4 2 3 4 2 2 2 2 4 4 4 2 6 GR500A-4C E RIVET
LDW280-10964-95 GANG CHANNEL NAS688P-6-6 STD PART
LDW280-10964-93 GANG CHANNEL NAS688P-6-5 STD PART
-91 P-5-3
-89 P-6-4
-87 -9
-85 -7
-83 -3
LDW280-10964-81 GANG CHANNEL STD PART
LDW280-10964-1 ZEE QQA-355 2024-T3
-39
-37
-35
-33
-31
-57
-55
-53
-9
BRACKET ASSY
-17
-15
-13
-11
-9
-7
-5
-3

31 29 27 25 23 21	17 15 13	11 9	7 5	3 1	PART OR IDENTIFYING NO.	I & T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC
QTY REQ D PER ASSY											

LEM	LDW280-28051	LEM-2(32)	3 EA
LEM	LDW280-28051	LEM-1(31)	3 EA
LEM	LDW280-28051	LTA-8(18)	3 EA

PART NO. LDW280-10964-31

MODEL	NEXT ASSY	MODULE NO.	REQ D PER MODULE
LEM	LDW280-28051	LEM-2(32)	1 EA
LEM	LDW280-28051	LEM-1(31)	1 EA
LEM	LDW280-28051	LTA-8(18)	1 EA

PART NO. LDW280-10964-21, -23, -25, -27 GRUMMAN SCH INFO

LEM	LDW280-28051		
LEM	LDW280-28051		
LEM	LDW280-28051	LTA-8	

PART NO. -3, -

MODEL	NEXT ASSY	MODULE NO.	REQ D PER MODULE
LEM	LDW280-28051	LEM-2	
LEM	LDW280-28051	LEM-1	
LEM	LDW280-28051	LTA-8	

PART NO. LDW280-10964-1-5 THRU 5 GRUMMAN SCH INFO

LEM	LDW280-28051	LEM-2 (32)	4 EA
LEM	LDW280-28051	LEM-1 (3)	4 EA
LEM	LDW280-28051	LTA-8 (18)	4 EA

PART NO LDW280-10964-17

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

DRAWN BY
CHECKED BY
LAYOUT BY

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE
GRUMMAN REL. INFO
PRIM. NO.

01/02 NAS 9-1100

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	~~G. S. S.~~	LSP-14-9030

RECORD E. O.'s

MODEL	E O NUMBER	MODULE NO.

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

REVISIONS

REVISION LETTER	ITEM NO.	ZONE	GRUMMAN INFO ONLY DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MODULE NUMBER	DISPOSITION OF EXIST PARTS RE-WORK	SCRAP	ENGRG APPD	GOVT APPD
A	1							IN M/B ADDED LDW280-10964-15 (1) REQ, LDW280-10964-27(2) REQ WAS (1) REQ. IN B/M & TAB CHART REMOVED LDW280-10964 -19, -33, -59 & -93 (1) PLC. IN TAB CHART: ADDED B.R. COLUMN, LDW280-10964-27(2) REQ WAS (1) REQ. IN F/D ADDED NOTE #1	Joe Cacioppo 4-15-66	LTA-8 LEM-1 LEM-2		/		

DWG. SIZE 34 X

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X) = SQ. FT.
½ SIZE SHEET AREA (¼ OF FULL) = SQ. FT.

PRINT TRIM LINE

MANUFACTURING OPERATIONS

NOTES CHECKED ✓ APPLY TO THIS DWG.

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- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.
- 125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.
- 200 FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- RUBBER STAMP PART NUMBER ~~AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.~~ ✓
- FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- INSPECTION INFORMATION MINIMUM PERMISSIBLE ~~AVERAGE~~ EDGE DISTANCE ~~MARKED~~ IS 1½ FASTENER DIA.
- SYMBOL ƒ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32 ✓

NOTES
A. INSTALL FASTENERS PER LSP14-13-3

02/02 NAS 9-1100

QTY REQ'D PER ASSY	PART OR IDENTIFYING NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE
3 4 2 3 4 2 2 2 2 4 4 6 4 2 6	GK500A-4C	E		RIVET	STD PART							
1	LDW280-10964-95			GANG CHANNEL	NAS688P-6-6	STD PART		LGTH = 4½				
	LDW280-10964-93			GANG CHANNEL	NAS688P-6-5	STD PART		LGTH = 3 1/16				
	-91				NAS688P-5-3			1 15/16				
	-89				NAS688P-6-4			2 15/16				
	-87				-9			6 1/16				
	-85				-7			5 3/16				
	-83				-3			2 3/16				
1	LDW280-10964-81			GANG CHANNEL	NAS688P-6-11	STD PART		LGTH = 8 3/16				
	LDW280-10964-71			ZEE	AL-ALLOY	QQ-A-355	2024-T3	.040 x 5/16 x				
	-69											
	-67											
	-65											
	-63											
	-61											
	-57											
	-55											
	-53											
	-51											
	-49											
	-47											
	-45											
	-43											
1	LDW280-10964-41			ZEE	AL-ALLOY	QQ-A-355	2024-T3	.040 x 5/16				
	-31			BRACKET ASSY								
	-29											
	-27											
	-25											
	-23											
	-21											
	-17											
	-15											
	-13											
	-11											
	-9											
	-7											
	-5											
	-3											
-31 -29 -27 -25 -23 -21 -17 -15 -13 -11 -9 -7 -5 -3 -1	LDW280-10964-1	E		BRACKET ASSY								

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
LEM	LDW280-28051	LEM-2(32)	3 EA
LEM	LDW280-28051	LEM-1(31)	3 EA
LEM	LDW280-28051	LTA-8(18)	3 EA

PART No. LDW280-10964-31

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
LEM	LDW280-28051	LEM-2(32)	2 EA
LEM	LDW280-28051	LEM-1(31)	2 EA
LEM	LDW280-28051	LTA-8(18)	2 EA

PART No. LDW280-10964-3, -25, -27

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
LEM	LDW280-28051	LEM-2(32)	1 EA
LEM	LDW280-28051	LEM-1(31)	1 EA
LEM	LDW280-28051	LTA-8(18)	1 EA

PART NO. LDW280-10964-21, -23, -27, -29 GRUMMAN SCH INFO

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
LEM	LDW280-28051	LEM-2(32)	1 EA
LEM	LDW280-28051	LEM-1(31)	1 EA
LEM	LDW280-28051	LTA-8(18)	1 EA

PART NO. LDW280-10964-1, -5 THRU -15 GRUMMAN SCH INFO 7/13

LEM	LDW280-28051	LEM-2 (32)	4 EA
LEM	LDW280-28051	LEM-1 (31)	4 EA
LEM	LDW280-28051	LTA-8 (18)	4 EA

PART No LDW280-10964-17

PARTS TO BE REDRAWN IN PRODUCTION FORMAT

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
± 1/32 ± .020 ± ½°

DRAWN BY	S. Edwards	3/23
CHECKED BY		
LAYOUT BY	J. Cacioppo	
ORIG DWG AUTH		
DETAIL SPEC REQUIREMENT		
CLASS II ENGRG CHANGE		
CLASS I ENGRG CHANGE		
GRUMMAN REL INFO		
PRIM. NO.		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

BRACKET ASSY
ASCENT STAGE - CABIN - EQUIP LINES

CONTRACT NO. NAS 9-1100 DOCUMENTATION TYPE II

CODE IDENT NO.	SIZE	
26512	J	LDW280-10964

SCALE SHEET 1

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW280-10964 | EO NO. B1

CONTROL INFO NO. LDW280-6177

FOR -15 & -17 ASSY:

IN F/D & B/M REMOVE -91 GANG CHANNEL (ALL EFFECTIVITIES)
REPLACE WITH -97 GANG CHANNEL (MAKE FROM NAS688P-6-2)
LENGTH 1 3/4 (1) EA. REQ IN -15 & -17

IN TAB COLUMN "B DIM" (NOW) — 7/16 FOR -15 & -17
(WAS) 5/16 IN -15
3/8 IN -17

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

3

REASON FOR EO: NAS688P-5 HARDWARE NOT AVAILABLE

DESCRIPTION OF EO: IN -15 & -17 ASSY: ADD -97 GANG CHANNEL REMOVE -91

GAEC C EO RELEASE: MP 10 CR; RS

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA-8 (18)	
		LEM-1 (31)	
		LEM-2 (32)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			✓-91

APPROVED BY								
	AMR		—	FEP				
DATE	4/16	4-18		—	4/16		4-19	4-27-66
VDI	SUPPORT WTJ	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT	

PRIORITY: C

DRAWING TITLE: BRACKET ASSY ASCENT STAGE CABIN-EQUIP LINES

DRAWING NO. LDW280-10964

EO NO. B1

ISSUED BY JOE CALANDRA 1441

SECTION V.D.I.

GROUP NO. 335 PL 35

ENG 32.1 REV 3-66

GRUMMAN AIRCRAFT ENGINEERING CORP.

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO LDW280-10964 EO NO. B2

CONTROL INFO NO. LDW280-6697

NOTE: FOR LTA-8(18), LEM-1(31) & LEM-2(32) N/A LDW280-28051

IN M/B & F/D: LDW280-10964-27 (1) REQ'D (NOW) (WAS)(2)
LDW280-10964-17 (5) REQ'D (NOW) (WAS)(4)
LDW280-10964-3 (3) (REQ'D (NOW) (WAS)(2)
LDW280-10964-5 (2) REQ'D (NOW) (WAS)(1)

IN M/B, F/D & B/M: REMOVE LDW280-10964-21 & -29 ALL REQ'MTS

IN M/B ADD LDW280-10964-35 (1) REQ'D

IN F/D & B/M ADD LDW280-10964-35 BRACKET ASSY
CONSISTING OF -73 ZEE (1)
&(1)-95 GANG CHANNEL (NAS688P-6-8)

FOR-35: IN TAB CHART L=6 1/2 B=11/16 No OF RIVETS=4 TH ZEE = .040
B.R.=1/8 MAT'L -73 ZEE AL. ALY 2024-T3 QQ-A-355
FIN 88

DESCRIP OF EO CONT'D
REMOVE -21 & -29 ASSY
ADD -35, -73 & -95

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO	DESCRIPTION OF EO
TO AGREE WITH LINES RUN REQM'TS	IN F/D, B/M & M/B FOR LTA-8, LEM1 & LEM2 REVISE QTY REQ'D OF LDW280-10964-27, -17, -3 & -5 *

GAEC EO RELEASE

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA-8(18)	
		LEM-1(31)	
		LEM-2(32)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			-27 -21, -29

APPROVED BY								
DATE	5/7/66	5-11		—	5/10		5-19	5-16-66
	V.D.I	~~SUPPORT~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	BRACKET ASSY ASCENT STAGE-CABIN-EQUIP LINES	LDW280-10964	B2

ISSUED BY JOE CALANDRA 1441 SECTION V.D.I. GROUP NO. 335 PL 35

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10964
EO NO. B3
CONTROL INFO NO. LDW 280 A 4339

IN M/B FOR LM 2 REVISE REQUIREMENTS

REMOVE (1) OF -27 REQ'D FOR LM 2 N/A LDW 280-28051

(2) REQD OF -3 WAS (3) REQD FOR LM 2 N/A LDW 280-28051

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: ADDITION OF ALLIGNMENT OPTICAL TELESCOPE GUARD. (LCR # 726) ON LM-2.

DESCRIPTION OF EO: REVISED LM 2 REQ'M'TS - REMOVED -27 AND (2) OF -3 WAS (3) REQD.

GAEC EO RELEASE: FR 1/7/7

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM2/32	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK ✓ SCRAP

APPROVED BY	JaP			RVPes				
DATE	12/22/66			12-19-66	12-29-66		12-29-66	1-7-67
6	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C
DRAWING TITLE: BRACKET ASSY A/S-CABIN EQUIP. LINES
DRAWING NO.: LDW280-10964
EO NO.: B3

ISSUED BY P. ABRAMS X1441 12/13/66 SECTION VDI-CABIN GROUP NO. 335 PL 35

01 NAS 9-1100

LDW280-10965 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28051	LM-2(32)	2
LM	LDW280-28051	LM-1(31)	2
LM	LDW280-28051	LTA-8(18)	2

PART NO. LDW280-10965-15 | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54051	LM-15(45)	2
		LM-14(44)	2
		LM-13(43)	2
		LM-12(42)	2
		LM-11(41)	2
		LM-10(40)	2
		LM-9(39)	2
		LM-8(38)	2
		LM-7(37)	2
		LM-6(36)	2
		LM-5(35)	2
	LDW280-54051	LM-4(34)	2
	LDW280-28051	LM-2(32)	2
	LDW280-28051	LM-1(31)	2
LM	LDW280-28051	LTA-8(18)	2

PART NO. LDW280-10965-1 | GAEC SCH NO. 313

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO. | GAEC SCH NO.

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -47

GRUMMAN REL INFO A

PRIM NO. 215 EMF

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.010 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	S. BRASWELL 3-22-66
LAYOUT BY	
CHECKED BY	J. CALAUDA 3-23-66
GR. LEADER	PUSATERI
VEH. DES. INT.	W. BISCHOFF
STRUCT	
STRUCT	R. HILDERMAN
WEIGHTS	D. ROBESCH
PROJ ENGR	J. ALBER 4-4-66
REL GROUP	A CARAMANKA 4-6-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET ASSY
ASCENT STAGE, CABIN, EQUIP LINES

SIZE B | CODE IDENT NO. 26512 | LDW280-10965 | A
SCALE NONE | SHEET 1 OF 4.00

ENG 77.1 12-65

SUPERSEDES LDW280-10965 "NO CHG" 4-5-66

01 NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
				RETRACED NO CHG LAST REV					NO CHG LOFTED DWG WAS DIM ADDED SH 1.10,2.00 & 3.00 KOCHLING 10-14-66	NOT REQD					
A	1							EOA1	ON-35 ADD DRILL NO. 40(.097-.102) HOLES IN 4 PLACES. ON-31 & -33 ADD DRILL NO 40(.097-.102) IN 2 PLACES.	LM-2(32) LM-1 (31)	✓		P. KOCHLING 10-14-66 MULLEN		
	2							EOA2	IN B/M, FLD & MOD BLK REMOVE LDW280-10965-11 & -13	LTA-8(18)		-11 & -13			
	3							EOA3	IN MOD BLK ADDED REQ'M'TS FOR (2) OF-1 N/A LDW280-54051 LEM 4 THRU LEM 15 GB	LM-4 THRU LM-15 (45	NOT	REQD			

CHG APPROVED LTR	GROUP LDR	VEH.DES.INT	STRUCTURES	STRUCTURES	RELIABILITY	WEIGHTS
A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10965	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY -15	QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
3	2		GR500A-4C	E	RIVET	GRUMMAN STD						
1			LDW280-10965-47		GANG CHANNEL	NAS688P-6-8			ACT. LENGTH 5 15/16			
	1		LDW280-10965-43		GANG CHANNEL	NAS688P-6-3			ACT. LENGTH 2 3/16			
1			LDW280-10965-35		ZEE	AL ALLOY SH	QQ-A-250/4	2024	.040 × 3 × 7	T3/42	88	
	1		LDW280-10965-21		ZEE	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 × 3 × 4	NONE	88	
			LDW280-10965-15		BRACKET ASSY					NONE	NONE	
			LDW280-10965-1	E	BRACKET ASSY					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T3/42	AL HEAT TREAT	
								LSP 149030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

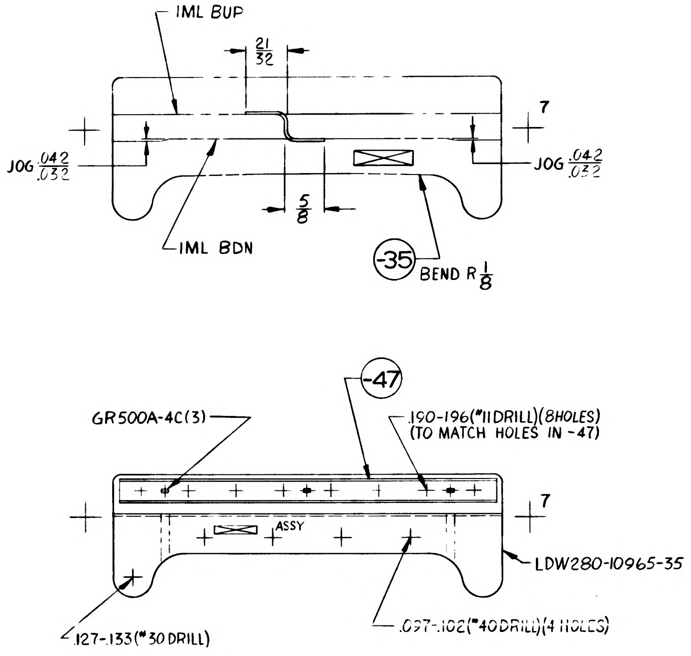
SIZE	CODE IDENT NO.		
B	26512	LDW280-10965	A
SCALE NONE		SHEET 2.00	

ENG 77.2 7-65

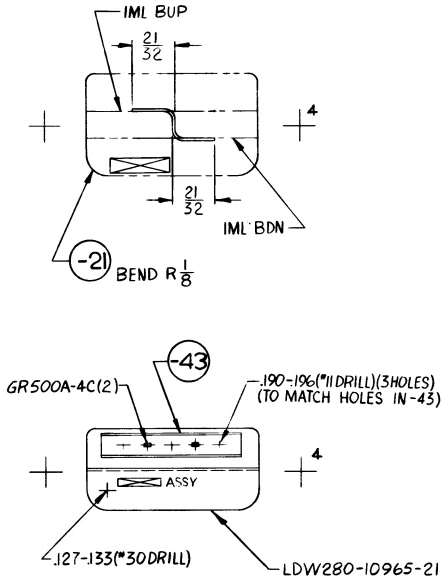
01

NAS 9-1100

LDW280-10965 A


IML BUP
21/32
5/8
7
JOG .042/.032
JOG .042/.032
IML BDN
-35
BEND R 1/8
-47
GR500A-4C(3)
.190-.196(#11 DRILL)(8 HOLES) (TO MATCH HOLES IN -47)
ASSY
7
LDW280-10965-35
.127-.133(#30 DRILL)
.097-.102(#40 DRILL)(4 HOLES)

LDW280-10965-15 ASSY


IML BUP
21/32
4
21/32
IML BDN
-21
BEND R 1/8
-43
GR500A-4C(2)
.190-.196(#11 DRILL)(3 HOLES) (TO MATCH HOLES IN -43)
ASSY
4
.127-.133(#30 DRILL)
LDW280-10965-21

LDW280-10965-1 ASSY

SYMBOLS LEGEND

+ ● SYMBOLS ARE FOR LOCATION AND QUANTITY ONLY

A2

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE ~~AVERAGE~~ EDGE DISTANCE ~~MARKED~~ IS 1 1/2 FASTENER DIA	✓
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-10965A

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

LM	SIZE D	CODE IDENT NO. 26512	LDW280-10965	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION K3

01 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280
EO NO. 339
CONTROL INFO NO. LDW280A-0664

REVISE LEM 3 REQ'M'TS IN THE MODEL BLOCK OF FOLLOWING DRAWINGS.

DRAWING NO.	DASH NO*	NO. REQD **	WAS	CHG. NO.	TITLE	DISPOSITION OF PARTS
✓ LDW 280-10965	-1	1	NONE	B1	SUPPORT ASSY-ASCENT STAGE-CABIN-EQUIP LINES	NOT REQD
-11024	-1, -5	1 EA	NONE	B4		
-11135	-15	1	NONE	B4		
-11136	-15	1	NONE	C1		
-11139	-7	11	9	B3		
-11283	-9	3	2	B3		
11501	-1, -3, -7	1 EA	NONE	B1		
11503	-3, -7, -11	1 EA	NONE	B1		NOT REQD

REVISED LEM 3 REQUIREMENTS ON LDW280-11139 AND LDW280-11283. ADDED LEM 3 REQUIREMENTS ON OTHER NOTED DWGS. N/A FOR ALL DASH NOS. LDW280-53051

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: TO UPDATE WIRING SUPPORT BRACKETS TO ACCOMODATE LEM 3

DESCRIPTION OF EO: ON DASH* QUANTITIES ** WAS REVISED AS NOTED.

GAEC EO RELEASE: ② C

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM 3(33)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOTED (REWORK / SCRAP)

APPROVED BY: V.D.I.

DATE: 9-26-66

SUPPORT / RELIAB. GROUP / GROUP LEADER / STRESS GROUP / LIAISON ENGRG / PROJ ENGRG / ~~GOVT~~

10-25-66

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO.: LE0280

EO NO. 339

ISSUED BY P. ABRAMS X1441 9/23/66 SECTION VDI GROUP NO. 335 PL 35

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW280-10965
EO NO. B2
CONTROL INFO NO. LWD 280A 4427 ✓

IN M/B FOR LM 2 REVISE REQUIREMENTS

(1) REQD OF -15 (WAS) (2) REQD FOR LM 2 N/A LDW280-28051

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITION OF ALLIGNMENT OPTICAL TELESCOPE GUARD (LCR #726) ON LM-2

DESCRIPTION OF EO: REVISED LM2 REQ'M'TS 1 OF -15 REQD WAS 2 REQD

GAEC EO RELEASE: CE 1/6/7

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM 2 (32)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK SCRAP — NOT REQD

			SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY	Jap				RVPes	mgm		RMC	
DATE	12/20/66				12-19-66	12-29-66		12-29-66	1-7-67
6	V.D.I.								

PRIORITY: C
DRAWING TITLE: BRACKET ASSY -A/S CABIN EQUIP. LINES ✓
DRAWING NO.: LDW280-10965
EO NO.: B2

ISSUED BY P. ABRAMS 12/13/66 X1441 SECTION VD1-CABIN GROUP NO. 335 PL 35

01 NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

~~DWG~~ E.O. NO. LEO 280 | EO NO. 477
CONTROL INFO NO. LDW280-A5577

ON THE FOLLOWING DRAWINGS CHANGE GR500A-4C RIVETS TO GR501A-4B CSK. RIVETS.

DWG. NO.	CHG. NO.
LDW280-10965 ✓	B3
11024 ✓	C6
11108 ✓	C1
11109 ✓	A5
11135 ✓	B5
11136 ✓	C2
11137 ✓	B4
11139 ✓	B4
11280 ✓	B1
11281 ✓	B3
11283 ✓	B4
11501 ✓	B3
LDW280-11503 ✓	B2

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐ 3

REASON FOR EO: TO FACILITATE INSTALLATION OF WIRING CLAMPS.

DESCRIPTION OF EO: ON THE ABOVE NOTED DWGS. CHANGE GR500A-4C RIVETS TO GR501A-4B RIVETS.

GAEC C EO RELEASE: FR 2/17/

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LM7(37) THRU LM-15(45)		

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY					GW			
DATE	2/16/67			2/16/67	2.17		2-20-67	2.20.67

PRIORITY: C
DRAWING TITLE: SUPPORT ASSEMBLY
E.O. ~~DRAWING NO.~~: LEO 280
EO NO.: 477

ISSUED BY E. STAHL X1153 SECTION V.D.I GROUP NO. 335 PL 35

NAS 9-1100

01

LDW280-10967 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-10967	LEM-3(33)	2
		LEM-2(32)	
		LEM-1(31)	
LEM	LDW280-10967	LTA-8(18)	2
PART NO. LDW280-10697-13		GAEC SCH NO. 31-1	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28302	LEM-3(33)	1EA
		LEM-2(32)	
		LEM-1(31)	
LEM	LDW280-28302	LTA-8(18)	1EA
PART NO. LDW280-10967-1-11-17-18		GAEC SCH NO. 31-1	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO		
LAST DASH NO. USED	-18	PRIM NO.	LE(001)	
		215	MP12A	JR 5/25A

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	BRANDT 3/19/66	RELIABILITY	
LAYOUT BY	BRANDT 3/19/66		
CHECKED BY			
GR LEADER	R.V. PHILLIPS 3/20/66		
VEH DES INT	W.BISCHOFF 3/21/66		
STRUCTURES	FEB 3/21/66	PROJ ENGR	J.ALBER RMC 4/19/66
STRUCTURES	HILDERMAN 3/22/66	REL GROUP	A.CARAMANICA 4/21/66
WEIGHTS	ROBESCH DJL 3/25/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HAT
ASCENT~MID SECTION +Y20~X294
VHF/UHF EQUIPMENT SUPPORT

SIZE B
CODE IDENT NO. 26512
LDW280-10967 A
SCALE FULL NONE
SHEET 1.00 OF 4.00

ENG 77.1 12-65

▲ THIS DWG SUPERSEDES LDW280-10967 "NO CHANGE 4-21-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
A	1	1.00,1.10, 2.00,3.00							RETRACED NO CHANGE LAST REVISION NO CHANGE. SH.1OF4 WAS 1OF1. LOFTED DWG WAS DIMENSIONED.	NOT REQD	NOT	REQD	JAEGGI 5-19-66 EG		3 Jun 66 6-7-66
	2							Ⓡ	REMOVED -14. IN MOD. BLK. FOR -13 (2) REQ WAS (1).	LTA-8,LEM-1-2-3	✓				

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10967	A
SCALE NONE		SHEET 1.10	

01

NAS 9-1100

QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		NAS1097 AD4	E	RIVET	STD PART						
		MS20246 AD3		RIVET	STD PART						
4		NAS697 A06		NUT PLATE	STD PART						
2		LDW280-10967-19		RAD. BLOCK	AL ALLOY SH	QQ-A-250/4	2024-T3	.063 x 1 1/2 x 2 5/8	NONE	76	
		-18		ANGLE				.032 x 2 1/8 x 7 3/8		88	
		-17		ANGLE				.032 x 2 1/8 x 7 3/8			
1		-15		HAT				.040 x 3 7/8 x 6 3/8			
		-13		ZEE		QQ-A-250/4	2024-T3	.040 x 2 5/8 x 3 1/8	NONE		
		LDW280-10967-11		HAT	AL ALLOY SH	QQ-A-250/12	7075	.032 x 3 7/8 x 6 1/4	T6	88	
		LDW280-10967-1	E	HAT ASSY					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						76	ALODINE	LSP14-9010
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10967	A

SCALE NONE

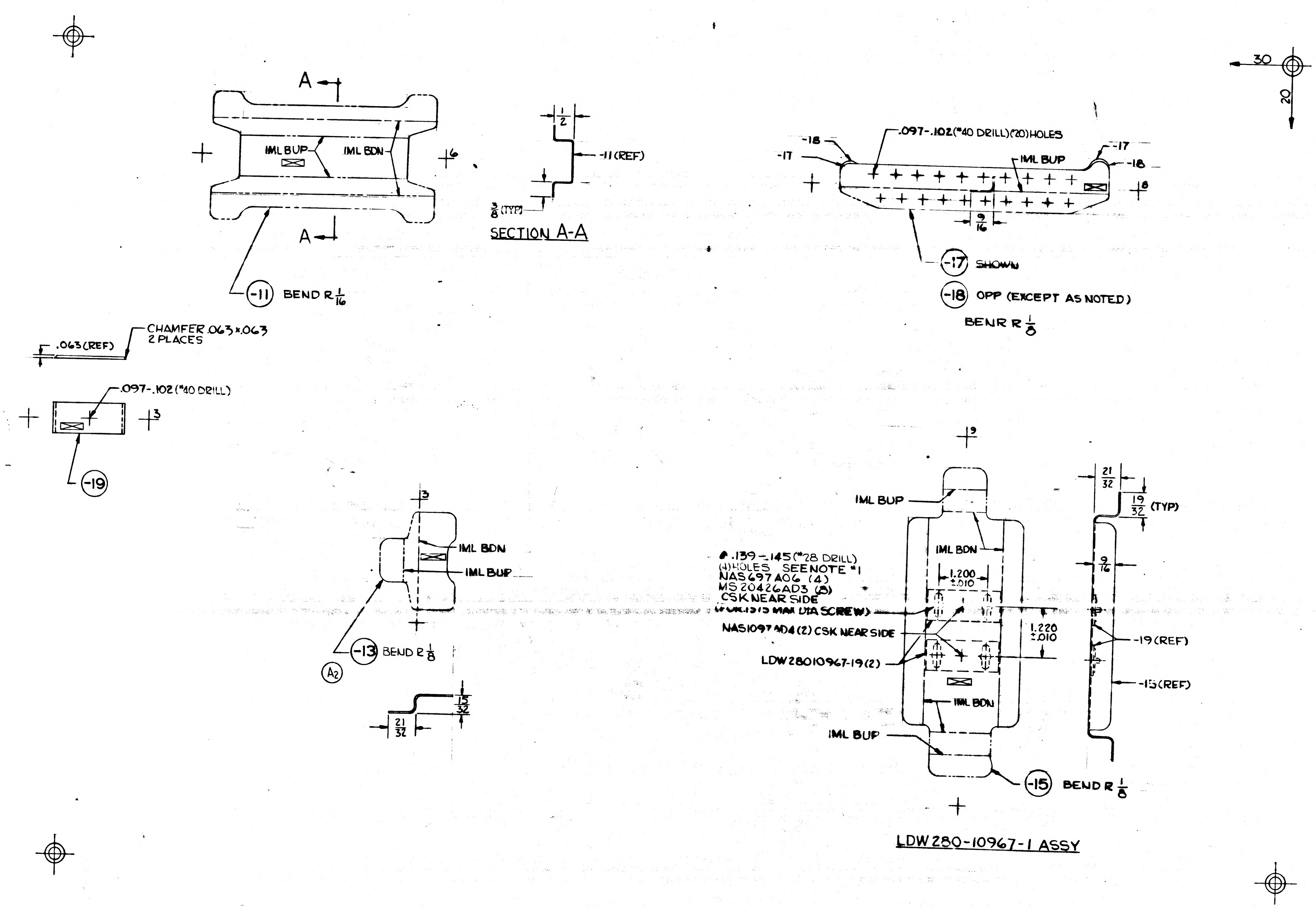
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. FOR HOLES MARKED ▲ SEE DRAWING LSC 380-00016 FOR CORRESPONDING HOLE PATTERN.
2. NO TOOLING HOLES PERMITTED IN PARTS.


A
A
IML BUP
IML BDN
6
-11
BEND R 1/16
1/2
-11 (REF)
3/8 (TYP)
SECTION A-A
CHAMFER .063×.063
2 PLACES
.063 (REF)
.097-.102 (#40 DRILL)
3
-19
3
IML BDN
IML BUP
-13
BEND R 1/8
A2
15/32
21/32
30
20
.097-.102 (#40 DRILL) (20) HOLES
-18
-17
-17
-18
IML BUP
8
9/16
-17 SHOWN
-18 OPP (EXCEPT AS NOTED)
BEND R 1/8
9
IML BUP
IML BDN
⌀.139-.145 (#28 DRILL)
(4) HOLES SEE NOTE #1
NAS697A06 (4)
MS20426AD3 (8)
CSK NEAR SIDE
(FOR .1515 MAX DIA SCREW)
NAS1097AD4 (2) CSK NEAR SIDE
LDW28010967-19 (2)
1.200 ±.010
1.220 ±.010
IML BDN
IML BUP
21/32
19/32 (TYP)
9/16
-19 (REF)
-15 (REF)
-15
BEND R 1/8
LDW280-10967-1 ASSY

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS 1½ FASTENER DIA FROM FASTENER ℄	✓
SYMBOL ƒ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-10967 A

LDW280-10967 A

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE F	CODE IDENT NO. 26512	LDW280-10967	R A
MODEL OR ENG ITEM	SCALE FULL		SHEET 3:00	

2 FOR PHOTO REPRODUCTION 1

K2

NAS 9-1100

01

LDW280-10968 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28302	LEM-3(33)	1EA
LEM	LDW280-28302	LEM-2(32)	1EA
LEM	LDW280-28302	LEM-1(31)	1EA
LEM	LDW280-28302	LTA-8(18)	1EA
PART NO. LDW280-10968-1 & -13		GAEC SCH NO. 31-1	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	A	GRUMMAN REL INFO K			
LAST DASH NO. USED	-13	PRIM NO.	LE (001)		
		215	MP 12 A		BJ 5.31

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	BRANDT 3/19/66	RELIABILITY	
LAYOUT BY	BRANDT 3/19/66		
CHECKED BY			
GR LEADER	PHILLIPS 3/20/66		
VEH DES INT	W. BISCHOFF 3/21/66		
STRUCTURES	FEB 3/21/66	PROJ ENGR	J. ALBER RMC 3/29/66
STRUCTURES	HILDERMAN 3/22/66	REL GROUP	C. IFF 3/30/66
WEIGHTS	D. ROBESCH DJL 3/25/66		

R GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HAT
ASCENT STAGE-MID SECTION +Y17.25, X294
VHF/UHF EQUIPMENT SUPPORT

SIZE B
CODE IDENT NO. 26512
LDW280-10968 A
SCALE NONE
SHEET 1.00 OF 4

▲ THIS DWG SUPERSEDES LDW280-10968 "NO CHANGE" · 3-30-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00, 1.10, 2.00 & 3.00						Ⓡ	RETRACED NO CHANGE LAST REVISION NO CHANGE. SH. 1 OF 4 WAS 1 OF 1. LOFTED DWG WAS DIMENSIONED. WCG	NOT REQD	NOT	REQD	JAEGGI 5-13-66		

FOR CONTINUATION OF REVISIONS SEE SHEET ________

ENG 77.3 5-66

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10968	A
SCALE NONE		SHEET 1.10	

01

NAS 9-1100

QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		MS20426AD3	E	RIVET	STD PART						
4		NAS697A06		NUT-PLATE	STD PART						
		LDW280-10968-13		CLIP	AL ALLOY SH	QQ-A-250/4	2024-T3	.050×2¼×3⅜	NONE	88	
1		LDW280-10968-11		HAT	AL ALLOY SH	QQ-A-250/4	2024-T3	.050×6⅝×7	NONE	88	
		LDW280-10968-1	E	HAT ASSY					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

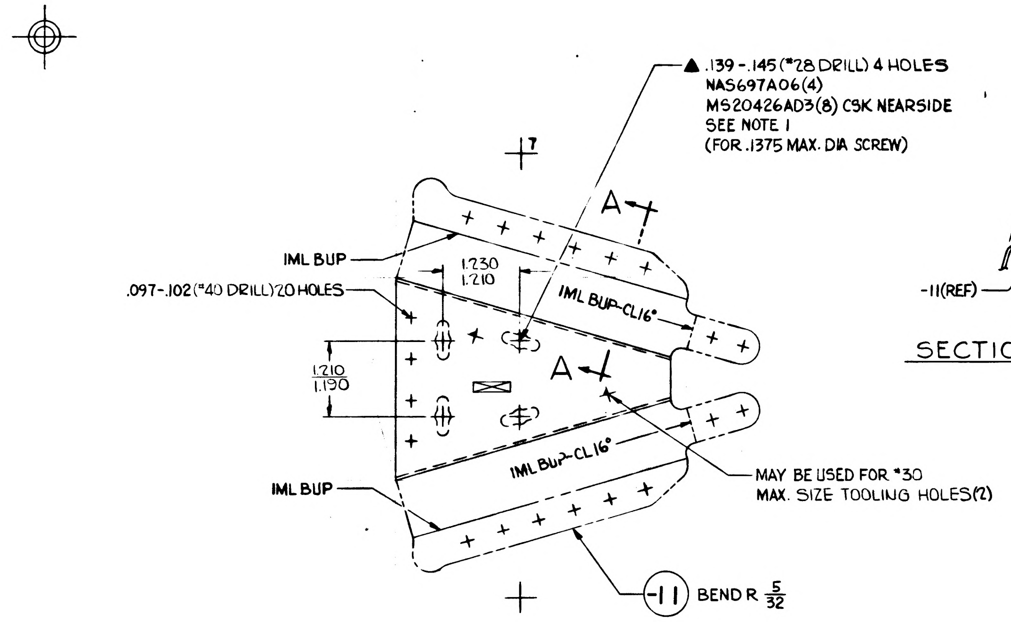
SIZE	CODE IDENT NO.		
B	26512	LDW280-10968	A

SCALE NONE SHEET 2.00

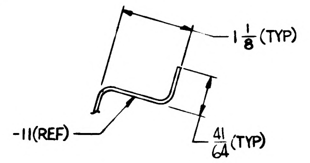
ENG 77.2 7-65

01

NAS 9-1100

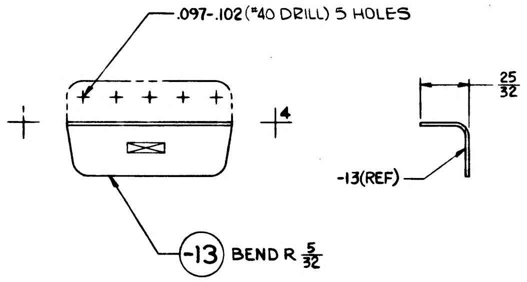

▲ .139-.145 (#28 DRILL) 4 HOLES
NAS697A06(4)
MS20426AD3(8) CSK NEARSIDE
SEE NOTE 1
(FOR .1375 MAX. DIA SCREW)
7
A
A
IML BUP
.097-.102 (#40 DRILL) 20 HOLES
1.230
1.210
IML BUP-CL16°
1.210
1.190
IML BUP-CL16°
IML BUP
MAY BE USED FOR #30
MAX. SIZE TOOLING HOLES(2)
-11
BEND R 5/32

LDW280-10968-1 ASSY


1 1/8 (TYP)
-11(REF)
41/64 (TYP)

SECTION A-A

NOTES:
1. FOR HOLES MARKED ▲ SEE DWG LSC380-00016 FOR CORRESPONDING HOLE PATTERN.
2. NO TOOLING HOLES PERMITTED IN PARTS EXCEPT AS SHOWN.


.097-.102 (#40 DRILL) 5 HOLES
4
25/32
-13(REF)
-13
BEND R 5/32

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
$\sqrt{125}$ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
$\sqrt{200}$ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE ~~AVERAGE~~ EDGE DISTANCE ~~MARKED~~ IS 1 1/2 FASTENER DIA FROM FASTENER ℄	✓
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK
LEM
MODEL OR END ITEM
SIZE D
CODE IDENT NO. 26512
LDW280-10968 A
SCALE: FULL
SHEET 3.00

FOR PHOTO REPRODUCTION
K2

01

NAS 9-1100

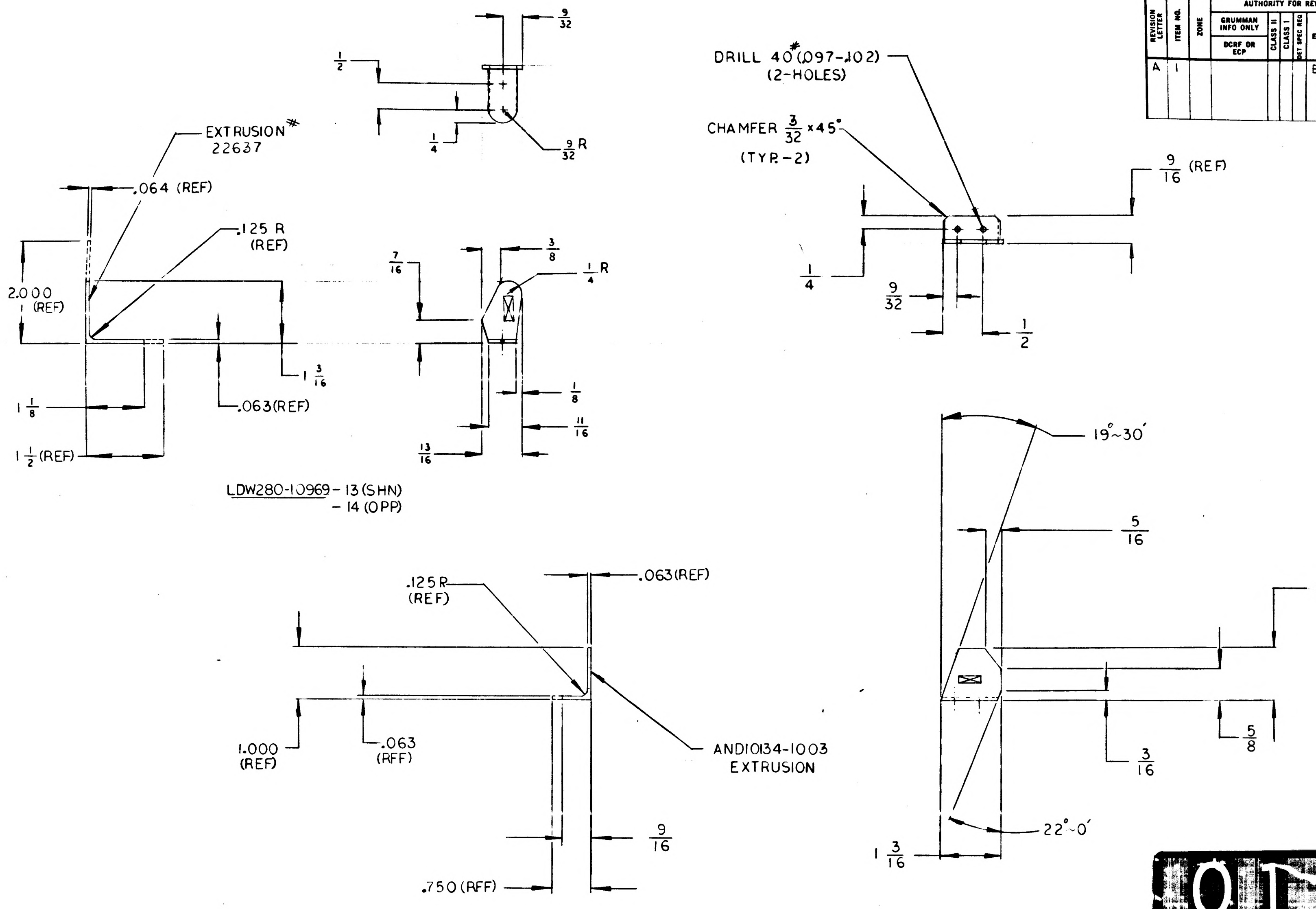
4	3	2	1

MANUFACTURING OPERATIONS

NOTES CHECKED ✓ APPLY TO THIS DWG.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.	✓
250 √ FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.	✓
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R − .010 .063R TO .250R ± .015 OVER .250R ± .030	✓
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	✓
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ƒ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓

REVISIONS

REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY / DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MODULE NUMBER	DISPOSITION OF EXIST PARTS: RE-WORK	SCRAP	ENGRG APPD	GOVT APPD
A	1						EO A1	N/A WAS LDW280-52075 ON LEM-2 (32), LDW280-51075 ON LEM-1(31) & LDW280-28075 ON LTA-8(18). REMOVED "FP" FROM PROCESS BLOCK REMOVED "1" FROM QTY. REQ. PER ASSY.	JAEGGI 5-11-66	LTA-8, LEM -1 & -2	✓			



LDW280-10969-13 (SHN)
-14 (OPP)

LDW280-10969-11 (SHN)
-12 (OPP)

NAS 9-1100

PARTS TO BE RE DRAWN ON
PRODUCTION FORMAT

QTY REQ D PER ASSY			PART OR IDENTIFYING NO.	I & T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE
			LDW280-10969-14	E		CLIP	AL-ALLOY	QQ-A-267	2024-T3	EXT * 22637	NONE	88		
			LDW280-10969-13	E		CLIP	AL-ALLOY	QQ-A-267	2024-T3	EXT * 22637	NONE	88		
			LDW280-10969-12	E		CLIP	AL-ALLOY	QQ-A-267	2024-T3	AND10134-1003 x 1 1/4	NONE	88		
			LDW280-10969-11	E		CLIP	AL-ALLOY	QQ-A-267	2024-T3	AND10134-1003 x 1 1/4	NONE	88		

5

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	~~G. S. S.~~ LSP-	14-9030

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

ENG. 000 9-63

MODEL	NEXT ASSY	MODULE NO.	REQ D PER MODULE
LEM	LDW280-28298	LEM-2 (32)	1
LEM	LDW280-28298	LEM-1 (31)	1
LEM	LDW280-28298	LTA-8 (18)	1

PART NO. LDW280-10969-11, 12, 13, 14
GRUMMAN SCH INFO 313

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
±1/32 ±.010 ±30'

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE
GRUMMAN REL INFO A
PRIM. NO. 06001
215 MP1

DRAWN BY	S. BRASWELL	3/16/66
CHECKED BY		
LAYOUT BY	S. BRASWELL	3/16
LEADER	J. Cushion	3/17
VDI		3/21
STRUCT		3/21
STRUCT		3/22
WEIGHTS	A. Cohnitz	3-25
RELIAB		
RELEASE		3-10
PROJ ENG.		3-29-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

CLIP

ASCENT STAGE, FRONT FACE, C-BAND ANT Y=-10.80

CONTRACT NO. NAS 9-1100 DOCUMENTATION TYPE II

CODE IDENT NO. 26512 SIZE F 30 X 40 LDW280-10969 A

SCALE FULL LINE ITEM # 1 SHEET 1

4	3	2	1

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23032	LEM-6(36)	3 EA
LEM	LDW280-23032	LEM-5(35)	3 EA
LEM	LDW280-23032	LEM-4(34)	3 EA
LEM	LDW280-23032	LEM-3 (33)	3 EA
LEM	LDW280-23032	LTA-3 (13)	3 EA
PART NO. LDW280-10970-11,-12,-13,-14,-15,-16,-17&-18		GAEC SCH NO. 32-5	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	—	GRUMMAN REL INFO	
LAST DASH NO. USED	-18	PRIM NO.	LE(001)
		215	MP17

ENG 77.1 9-64

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	M.H.MULLER 3/22/66	RELIABILITY	
LAYOUT BY	G. WHISTON		
CHECKED BY	D.FASS 3-24-66		
GR LEADER	3/28/66		
VEH DES INT	3/29		
STRUCTURES	BW 3/31	PROJ ENGR	4-5-66
STRUCTURES	3/31	REL GROUP	4-6-66
WEIGHTS	4-5		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP
ASCENT STAGE MIDSECTION
X277.138 DECK, Z0, & ± Z10 1/4

SIZE B
CODE IDENT NO. 26512
LDW280-10970
SCALE NONE
SHEET 1.00 OF 3

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10970-18	E	CLIP	AL ALY EXTR	QQ-A-277	7075-T6511	DIE#102853 x 4 1/4	CM	88	
		-17		CLIP				DIE#102853 x 4 1/4	CM		
		-16		STIFFENER				DIE#102853 x 12 3/4	NOTE 3		
		-15		STIFFENER				DIE#102853 x 12 3/4	NOTE 3		
		-14		CLIP				DIE#46203 x 4 1/4	CM		
		-13						DIE#46203 x 4 1/4	CM		
		-12						DIE#102853 x 4 1/4	CM		
		LDW280-10970-11	E	CLIP	AL ALY EXTR	QQ-A-277	7075-T6511	DIE#102853 x 4 1/4	CM	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030						
CM	CHEM MILL	LSP14-26100						

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B

CODE IDENT NO. 26512

LDW280-10970

SCALE NONE

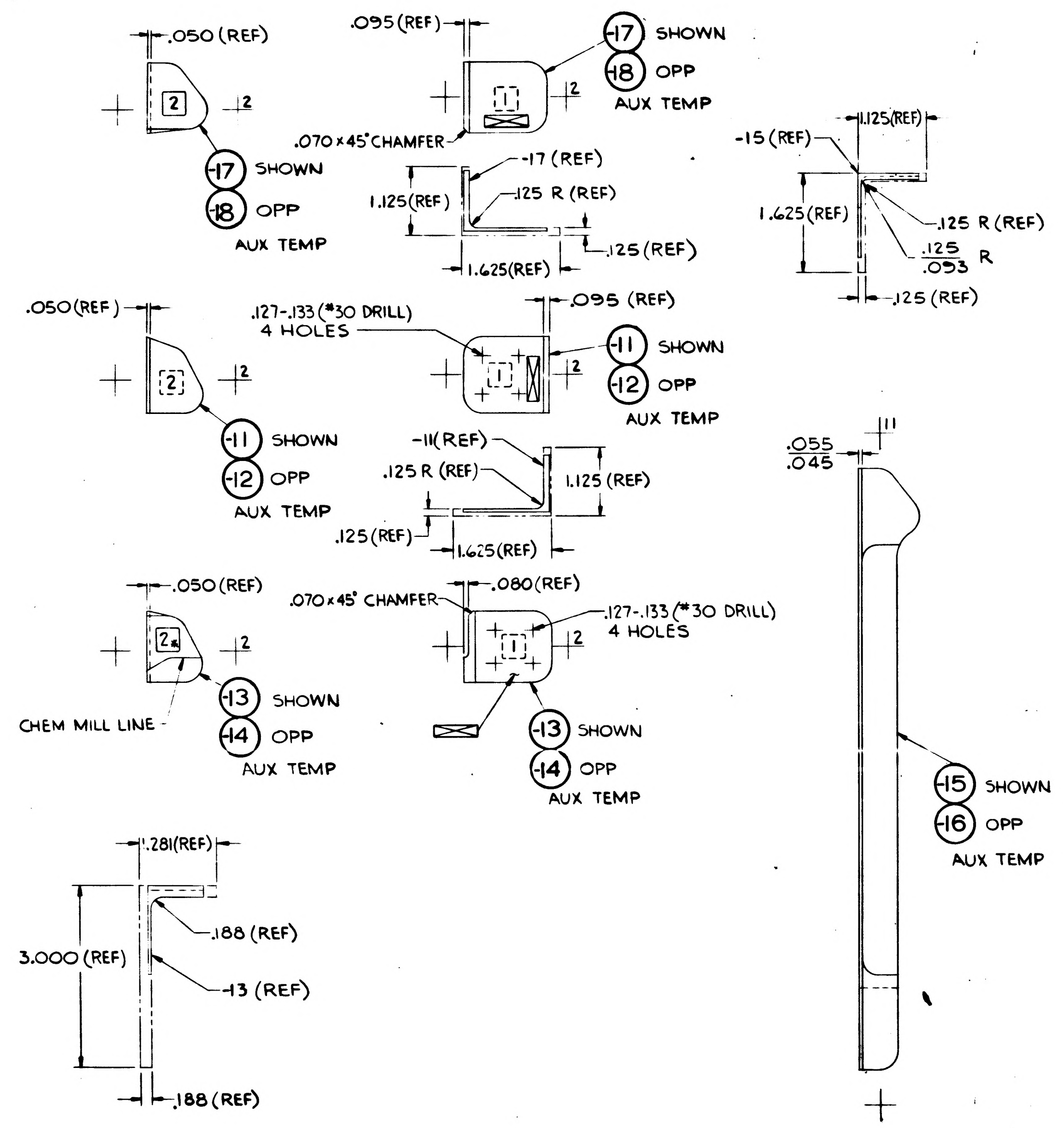
SHEET 2.00

ENG 77.2 7-65

01

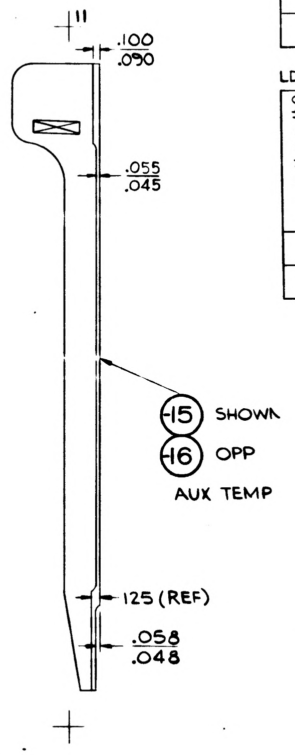
NAS 9-1100

LDW280-10970



.050 (REF)
2
2
-17 SHOWN
-18 OPP
AUX TEMP
.095 (REF)
1
2
-17 SHOWN
-18 OPP
AUX TEMP
.070 x 45° CHAMFER
-17 (REF)
1.125 (REF)
.125 R (REF)
.125 (REF)
1.625 (REF)
-15 (REF)
1.125 (REF)
1.625 (REF)
.125 R (REF)
.125
.053 R
.125 (REF)
.050 (REF)
.127-.133 (#30 DRILL)
4 HOLES
.095 (REF)
2
2
1
2
-11 SHOWN
-12 OPP
AUX TEMP
-11 SHOWN
-12 OPP
AUX TEMP
-11 (REF)
.125 R (REF)
1.125 (REF)
.125 (REF)
1.625 (REF)
.050 (REF)
2*
2
CHEM MILL LINE
-13 SHOWN
-14 OPP
AUX TEMP
.070 x 45° CHAMFER
.080 (REF)
.127-.133 (#30 DRILL)
4 HOLES
1
2
-13 SHOWN
-14 OPP
AUX TEMP
.055
.045
-15 SHOWN
-16 OPP
AUX TEMP
.281 (REF)
.188 (REF)
3.000 (REF)
-13 (REF)
.188 (REF)

NOTES:
1. FOR -11, -12, -13, -14, -17 & -18 OPTIONAL METHOD OF MANUFACTURING TO BE MACHINING.
2. NO TOOLING HOLES PERMITTED IN PARTS.
3. -15 & -16 TO BE CHEM-MILLED. OPTIONAL METHOD OF MANUFACTURING TO BE MACHINING



.100
.090
.055
.045
-15 SHOWN
-16 OPP
AUX TEMP
.125 (REF)
.058
.048

LDW280-10970-11, -12, 17 & -18

CHEM MILL LINE TOLERANCE
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	.050 ± .005	.075 (REF)
2	.095 ± .005	.030 (REF)

LDW280-10970-13 & -14

CHEM MILL LINE TOLERANCE
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	.050 ± .005	.138 (REF)
2*	.108 (REF)	.080 ± .005

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-10970

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

LEM	SIZE D	CODE IDENT NO. 26512	LDW280-10970
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

FOR PHOTO REPRODUCTION

01

23 GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
* ENGINEERING ORDER

ENG 32.2 REV 3-63

DWG. NO. LE028C
EO NO 295
CONTROL INFO NO. LDW280A0657

* TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9 (39), LEM-10(40), LEM-11(41), LEM-12 (42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4.34

DRAWING NUMBER	CHANGE NUMBER	TITLE
✓ LDW280-10789	A3	SEE DRAWING
✓ -10790	B1	
✓ H 10792	C1	
✓ -10796	A1	
✓ -10798	B1	
✓ -10800	B2	
✓ H 10801	A1	
✓ H 10802	B1	
✓ H 10804	B1	
✓ -10806	C1	
✓ -10808	A1	
✓ P 10809	B2	
✓ -10811	B2	
✓ -10813	B1	
✓ -10814	B1	
✓ -10815	A4	
✓ -10817	A1	
✓ -10838	B1	
✓ -10846	C1	
✓ -10927	B1	
✓ -10934	A1	
✓ -10953	B1	
✓ -10954	A1	
✓ -10955	A1	
✓ -10961	A3	
✓ P 10966	A4	
✓ -10970	A1	
-10973	A1	
-10974	A1	
-10976	A1	
-10977	A1	
-10979	A1	
LDW280-10980	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC RPG ☐ CL III ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM 15 EFF.

GAEC C EO RELEASE: LE 10-8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM	8(38) LEM 9(39)
LEM		LEM-10(40) LEM-1	1(41) LEM 12 (42)
LEM		LEM-13(43) LEM-1	4(44) LEM 15(45)

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
✓		NOT REQ'D						—				ac
				DATE	9/23/66			—	9.21		10-6-66	10-3-66
REVISE DWG	RECORD EO	REWORK	SCRAP		V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

CLASS: C
DRAWING TITLE: NOTED
DRAWING NO.: LE023C
EO NO.: 295

ISSUED BY L. DETURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 282 PL 35

LDW280-10971

LDW280-10971-13

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28178	LEM-2(32)	16
LEM	LDW280-28178	LEM-1(31)	16
LEM	LDW280-28178	LTA-8(18)	16

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28178	LEM-2(32)	1
LEM	LDW280-28178	LEM-1(31)	1
LEM	LDW280-28178	LTA-8(18)	1
PART NO. LDW280-10971-17		GAEC SCH NO. 30-	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28178	LEM-2(32)	2
LEM	LDW280-28178	LEM-1(31)	2
LEM	LDW280-28178	LTA-8(18)	2
PART NO. LDW280-10971-15		GAEC SCH NO. 30-	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28178	LEM-2(32)	12
LEM	LDW280-28178	LEM-1(31)	12
LEM	LDW280-28178	LTA-8(18)	12
PART NO. LDW280-10971-11		GAEC SCH NO. 30-	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00				
REV								
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED		GRUMMAN RELINFO		
		PRIM NO.	E(001)	
LAST DASH NO. USED	-17	215	MP12	JR 4-23

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	M. GIERAK 4-19	RELIABILITY	
LAYOUT BY	S. SIDMAN 4-20-66		
CHECKED BY	4-20-66		
GR.LEADER	J. Pusateri 4/21		
VEH.DES.INT	4/22		
STRUCTURES	4/22	PROJ ENGR	5-2-66
STRUCTURES	Silverman 4/28	REL GROUP	5-2
WEIGHTS	4/29		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP
ASCENT STAGE-CABIN
THERMAL SHIELD

SIZE	CODE IDENT NO.	
B	26512	LDW280-10971
SCALE	NONE	SHEET 1.00 OF 3

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10971-17	E	CLIP	AL. ALLOY SH	Q-Q-A-283	7075	.028 × 1¼ × 2⅞	T6	76	
		LDW280-10971-15	E	CLIP	AL. ALLOY SH	Q-Q-A-283	7075	.028 × 1¼ × 3	T6	76	
		LDW280-10971-13	E	CLIP	AL. ALLOY SH	Q-Q-A-283	7075	.028 × 1¼ × 2⅞	T6	76	
		LDW280-10971-11	E	CLIP	AL. ALLOY SH	Q-Q-A-283	7075	.028 × 1¼ × 2¾	T6	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						76	ALODINE	LSP14-9010
						T6	AL. HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10971

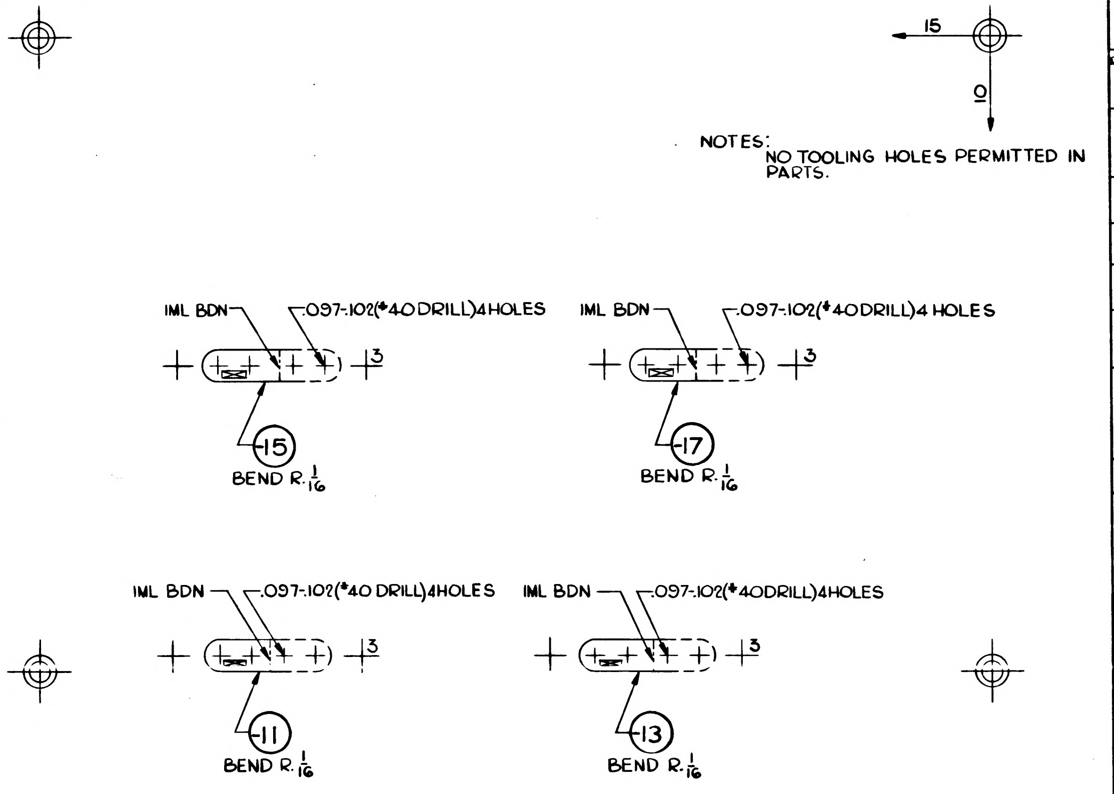
SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

1 TP/wu


15
10
IML BDN
.097-.102(#40 DRILL) 4 HOLES
3
15
BEND R. $\frac{1}{16}$
IML BDN
.097-.102(#40 DRILL) 4 HOLES
3
17
BEND R. $\frac{1}{16}$
IML BDN
.097-.102(#40 DRILL) 4 HOLES
3
11
BEND R. $\frac{1}{16}$
IML BDN
.097-.102(#40 DRILL) 4 HOLES
3
13
BEND R. $\frac{1}{16}$

NOTES:
NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL $\sqrt{}$ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-10971

LDW280-10971

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LEM	C	26512	LDW280-10971
	SCALE FULL		SHEET 3.00

FOR PHOTO REPRODUCTION

K2

NAS 9-1100

01

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10971 | EO NO. A1
CONTROL INFO NO. LM-5-11163

IN FLD OF DWG, B/M & MOD BLK, DELETED -11

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☐	✓

REASON FOR EO: PART NO LONGER REQD ON INSTL.

DESCRIPTION OF EO: DELETED -11

GAEC EO RELEASE: C FR

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8 (18)	
		LEM-1 (31)	
		LEM-2 (32)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			-11

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY	WT			–	JAB	CH	RWR	JRY
DATE	11/21/66			–	11/21/66	11/21/66	11-23-66	11/21/66
1								

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	CLIP-ASCENT STAGE - CABIN THERMAL SHIELD	LDW280-10971	A1

ISSUED BY LIAISON F. STEINMETZ/CCA SECTION VDI GROUP NO. 335 PL 5

01 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10971
EO NO. A2
CONTROL INFO NO. LM5-11186

IN MODEL BLOCK FOR -13 CLIP, NO REQD/MOD. IS 17 (WAS 16)

LM5-11186

5

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☐

REASON FOR EO: ADDITIONAL REQMTS

DESCRIPTION OF EO: IN M/B FOR -13, 17 REQ/MOD WAS 16 REQ/MOD

GAEC EO RELEASE: VE

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8(18)	
		LM-1(31)	
		LM-2(32)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓		NOT REQD	
REVISE DWG	RECORD EO	REWORK	SCRAP

APPROVED BY	WT			~	WB	CH		
DATE	11/23/66			~	11/23/66	11-23	11-23-66	11-23-66
/	VD1	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	CLIP - A/S CABIN THERMAL SHIELD	LDW280-10971	A2

ISSUED BY TDALY/W TRAUT x6455 SECTION VD1 GROUP NO. 335 PL 5

01 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10971
EO NO. A3
CONTROL INFO NO. LMS-11428

FOR LDW280-10971-13 REVISE MODEL BLOCK AS FOLLOWS:

N/A:	MOD	REQD/MOD
LDW280-28178	LM-2 (32)	6 WAS 16
↓	LM-1 (31)	6 WAS 16
	LTA-8 (18)	6 WAS 16

RELEASED BY LIAISON

(REF. E.O. LDW280-28178 C/N LM-5-11410)

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

5

REASON FOR EO: CLIPS REPLACED BY GOSSETS FOR SHEAR TIE

DESCRIPTION OF EO: IN -13 MOD. BLK, FOR NEXT ASSY. LDW280-28178, (6) REQD/MOD. WAS (16)

GAEC EO RELEASE: C

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8 (18)	
		LM-1 (31)	
		LM-2 (32)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK; SCRAP ✓ -13

APPROVED BY	WT			~	JaB	CH	RMC	
DATE	12/14/66			~	12/15/66	12-15	12-20-66	12/19/66
/	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C

DRAWING TITLE: CLIP A/S ~ CABIN ~ THERMAL SHIELD

DRAWING NO.: LDW280-10971

EO NO.: A3

ISSUED BY Lou Riedell x-6456 12-15-66 SECTION VDI GROUP NO. 335 PL 5

01 NAS 9-1100

ENG 32.1 REV 3-65

C

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO LDW280-10971	EO NO. A4
CONTROL INFO NO. LM-5-13370	

FROM -17 MODEL BLOCK, REMOVE LM-1 & LM-2 REQUIREMENTS

RELEASED BY LIAISON

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐

REASON FOR EO: PART NOT REMOVED WHEN AREA REDESIGNED

DESCRIPTION OF EO: FROM -17 MODEL BLOCK, REMOVED LM-1 & LM-2 REQUIREMENTS

GAEC EO RELEASE: 5 C JK —

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM-1 (31)	
		LM-2 (32)	

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
✓			✓

	6	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY		WT			~	[illegible]	CH	DAM (EJ)	[illegible]
DATE		5/12/67			~	[illegible]	5-12	5-16-67	5/12/67

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	CLIP A/S CABIN THERMAL SHIELD	LDW280-10971	A4

ISSUED BY F. STEINMETZ X6510 SECTION VDI GROUP NO. 335 PL 5

01

NAS 9-1100

LDW280-10972

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28178	LEM-2(32)	1 EA
LEM	LDW280-28178	LEM-1(31)	1 EA
LEM	LDW280-28178	LTA-8(18)	1 EA
PART NO. LDW280-10972-11, -13, -15, 17, -18 & -19		GAEC SCH NO. 30-	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	—	GRUMMAN REL^c INFO		
LAST DASH NO. USED	-19	PRIM NO. 215	VE(001) MP17	JR 5.17

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	M. MULLER 5/5/66	RELIABILITY	
LAYOUT BY	S. SIDMAN 6·14·66		
CHECKED BY	DF 5-10-66		
GR LEADER	5/14		
VEH DES INT	5/18		
STRUCTURES	5/16	PROJ ENGR	5-23-66
STRUCTURES	Bederman 5/16	REL GROUP	Botts 5-27-66
WEIGHTS	5-23		

Ⓡ GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE CABIN THERMAL SHIELD

SIZE	CODE IDENT NO.	
B	26512	LDW280-10972
SCALE NONE		SHEET 1.00 OF 3

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10972-19	E	CHANNEL	AL ALLOY SH	QQ-A-283	7075	.032 × 4 1/8 × 5 1/2	T6	88	
		↕ -18	↕	ANGLE	↕	↕	↕	.028 × 2 1/2 × 2 5/8	↕	76	
		↕ -17	↕	ANGLE	↕	↕	↕	.028 × 2 1/2 × 2 5/8	↕	↕	
		↕ -15	↕	ANGLE	↕	↕	↕	.028 × 9 3/8 × 53 5/8	↕	↕	
		↕ -13	↕	ANGLE	↕	↕	↕	.028 × 1 7/8 × 4	↕	↕	
		LDW280-10972-11	E	ANGLE	AL ALLOY SH	QQ-A-283	7075	.020 × 2 × 8 1/4	T6	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
76	ALODINE	LSP14-9010
T6	AL HEAT TREAT	MIL-H-6088
88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10972

SCALE NONE

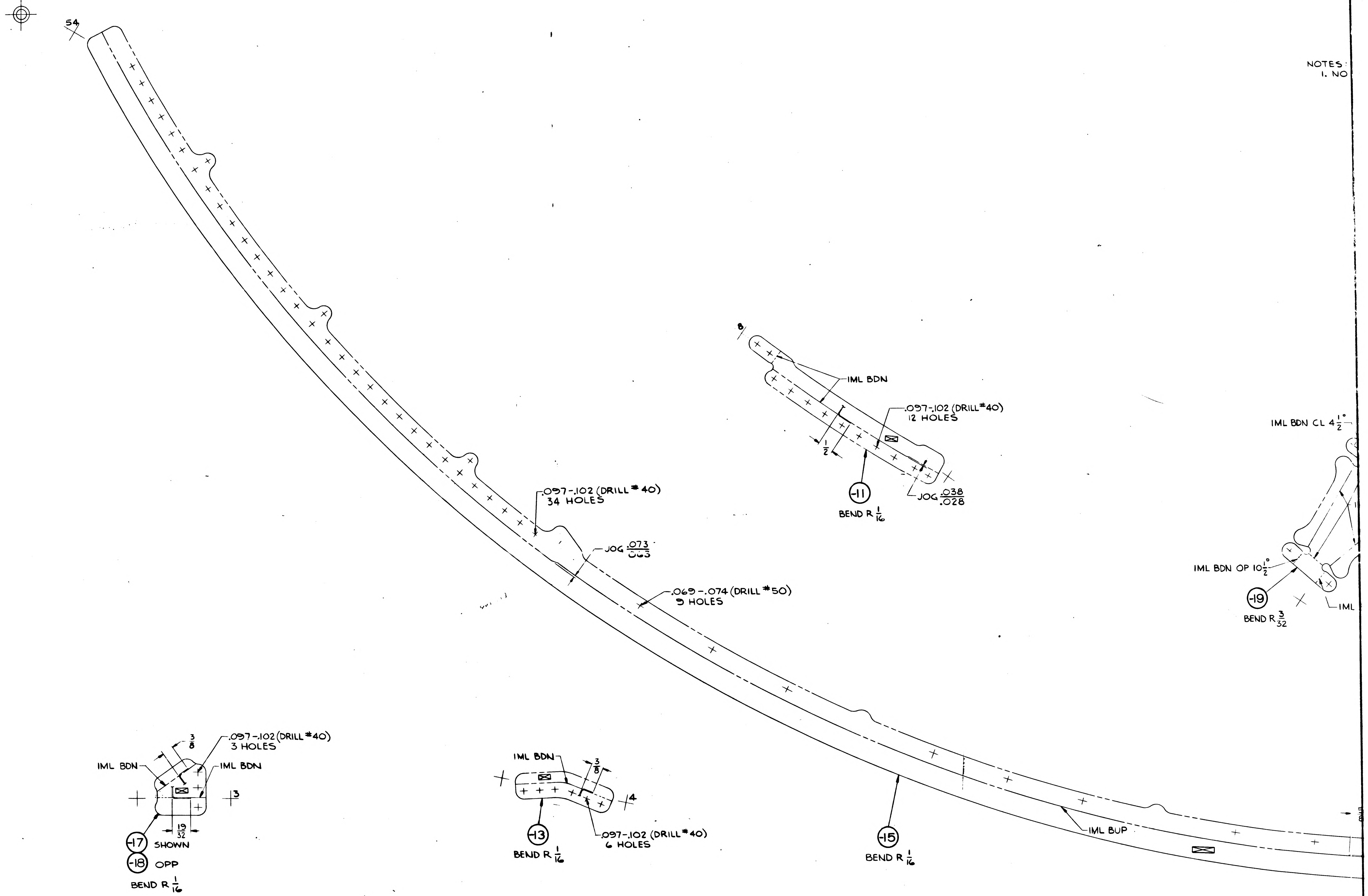
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

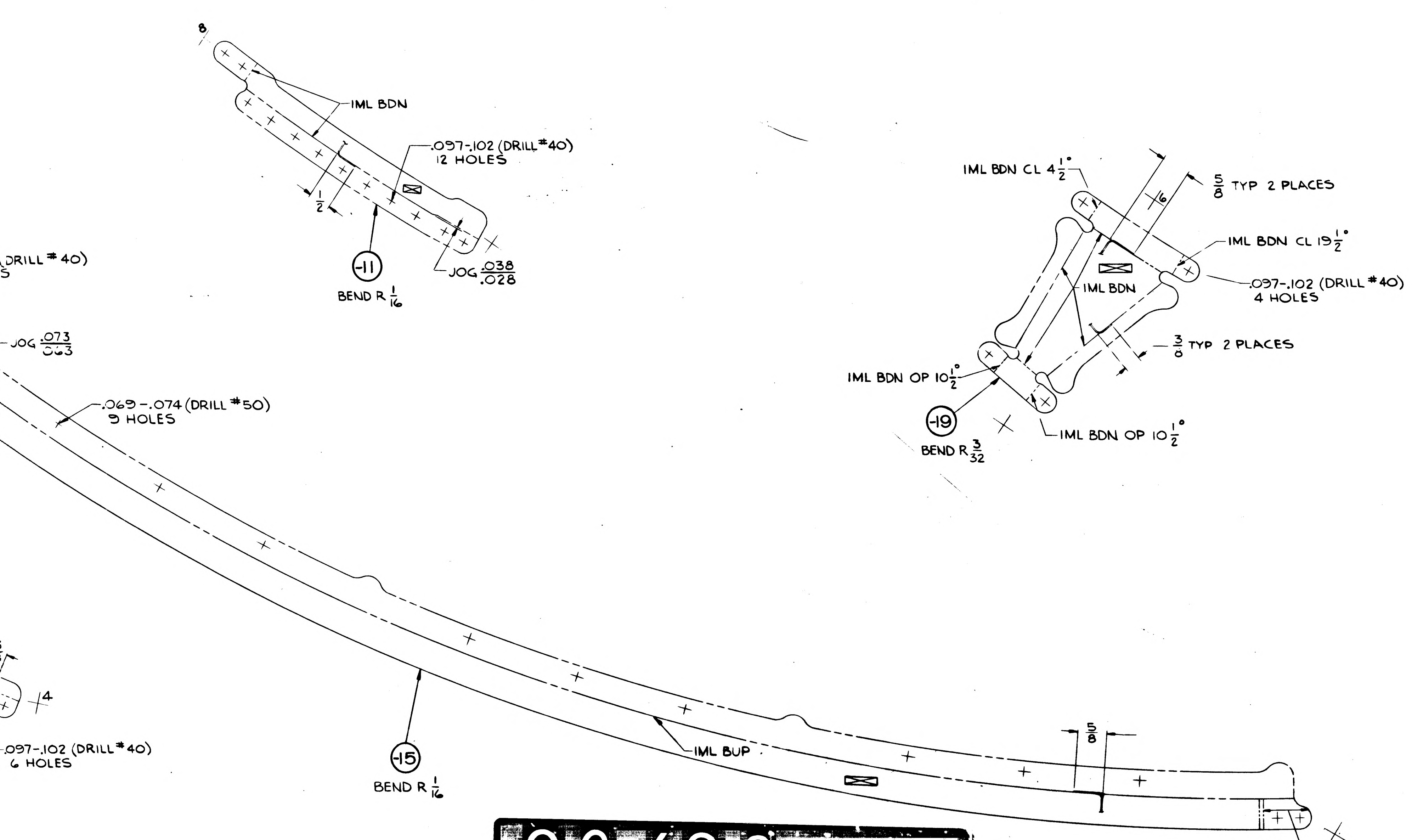
NOTES:
1. NO


54
.097-.102 (DRILL # 40)
34 HOLES
JOG .073/.063
.069-.074 (DRILL # 50)
9 HOLES
IML BUP
-15
BEND R 1/16
8
IML BDN
.097-.102 (DRILL # 40)
12 HOLES
1/2
-11
BEND R 1/16
JOG .038/.028
IML BDN CL 4 1/2°
IML BDN OP 10 1/2°
-19
BEND R 3/32
IML
3/8
.097-.102 (DRILL # 40)
3 HOLES
IML BDN
IML BDN
3
19/32
-17 SHOWN
-18 OPP
BEND R 1/16
IML BDN
3/8
4
-13
BEND R 1/16
.097-.102 (DRILL # 40)
6 HOLES

01/02 NAS 9-1100

CODE IDENT NO. 26512
LDW280-10972
SH 3

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.



8
IML BDN
.097-.102 (DRILL #40)
12 HOLES
$\frac{1}{2}$
-11
BEND R $\frac{1}{16}$
JOG $\frac{.038}{.028}$
(DRILL #40)
S
JOG $\frac{.073}{.063}$
.069-.074 (DRILL #50)
9 HOLES
4
.097-.102 (DRILL #40)
6 HOLES
-15
BEND R $\frac{1}{16}$
IML BUP
$\frac{5}{8}$
JOG DN $\frac{.030}{.020}$
IML BDN CL $4\frac{1}{2}°$
$\frac{1}{16}$
$\frac{5}{8}$ TYP 2 PLACES
IML BDN CL $19\frac{1}{2}°$
.097-.102 (DRILL #40)
4 HOLES
IML BDN
$\frac{3}{8}$ TYP 2 PLACES
IML BDN OP $10\frac{1}{2}°$
-19
BEND R $\frac{3}{32}$
IML BDN OP $10\frac{1}{2}°$

02/02 NAS 9-1100

CODE IDENT NO. 26512	
LDW280-10972	SH 3

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 34 X 70

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 72) = 18 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = $4\frac{1}{2}$ SQ. FT.

PRINT TRIM LINE

LDW280-10972

LDW280-10972

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE J	CODE IDENT NO. 26512	LDW280-10972	
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	2/2

FOR PHOTO REPRODUCTION K2

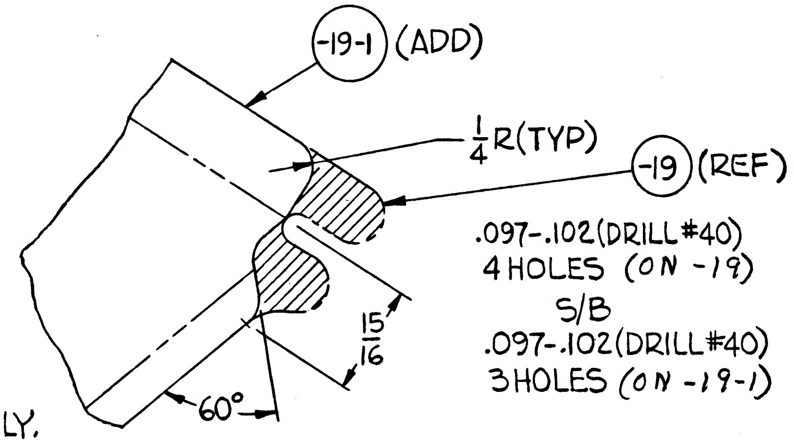
ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10972 | EO NO. A1
CONTROL INFO NO. LM-5-11100

SH 3.00 ZONE 3B, REWORK-19 (REMOVE HATCHED AREA), CREATING -19-1 AS SHOWN:

IN MODEL BLOCK:
REMOVE LTA-8 FROM -19.



(DIMENSIONS ARE FOR DRAFTING ONLY.
NOT TO BE ADDED TO DWG)

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
TO INSURE PROPER MATING OF PARTS	IN MOD BLK REMOVED LTA-8 FROM -19. TRIMMED -19, CREATING -19-1.	3

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8 (18)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS										
✓		✓		APPROVED BY	WT				DK	CH	RMC	CL
				DATE	11/16/66				11/19/66	11-19-66	11-22-66	11-19-66
REVISE DWG	RECORD EO	REWORK	SCRAP	1	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	CLIP - A/S CABIN THERMAL SHIELD	LDW280-10972	A1

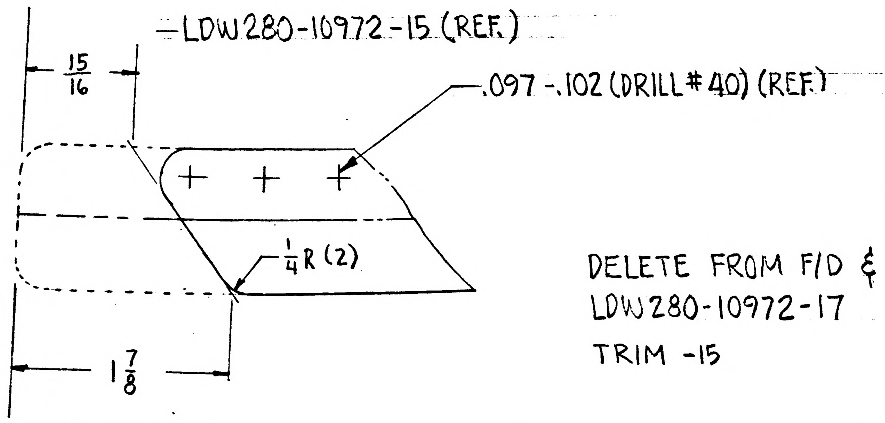
ISSUED BY LIAISON F. STEINMETZ/CCA X6454 SECTION VDI GROUP NO. 335 PL 5

01 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10972
EO NO. A2
CONTROL INFO NO. LDW280A-3990



DELETE FROM F/D & B/M
LDW280-10972-17
TRIM -15

ZONE 7-C

Pre-Therm Shield

DETAIL SPEC REQ	☐	CL II ENGRG CHG	✓	CL I ENGRG CHG	☐

3

REASON FOR EO: DESIGN CHANGE - INTEFERENCE ON N/A

DESCRIPTION OF EO: TRIMMED -15 & DELETED -17 FROM B/M & F/D

GAEC EO RELEASE: C 12/6/6

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-1 (31)	
LM		LM-2 (32)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK ✓ | SCRAP -17

APPROVED BY									
DATE	12/6/66	12/6/66		12-6-66	12/6		12/6	12/6/66	
/	VDI	~~[illegible]~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~	

PRIORITY: C

DRAWING TITLE: ANGLE ASCENT STAGE CABIN THERMAL SHIELD

DRAWING NO. LDW280-10972

EO NO. A2

ISSUED BY S.C. SIDMAN 12-3-66 X1441 SECTION VDI GROUP NO. 335 PL 35

01 NAS 9-1100

C

ENG 32.1 REV 3-66

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO LDW280-10972
EO NO. A3
CONTROL INFO NO. LDW280A-6270

RESTRICT -13 TO LTA-8
WAS EFF. LTA-8, LM1 & 2

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD 1069 CCA553 3

REASON FOR EO: TO ACCOMMODATE ADDITION OF PRESSURE CARTRIDGE CIRCUIT INTERRUPTER

DESCRIPTION OF EO: -13 WAS EFF LTA-8, LM1 & LM2

GAEC EO RELEASE: R JK 5/4/7

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONT'R UNIT NO.
LM	LM1(31) & LM2(32)		

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO ☐
DISPOSITION OF PARTS: REWORK ☐ SCRAP ✓

	2	VDI	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
APPROVED BY		Jap			F.D.L.	JV		Dam	
DATE		4/29/67			4/29/67	5/2/67		5/3/67	5.4.67

PRIORITY C
DRAWING TITLE: ANGLE A/S CABIN THERMAL SHIELD
DRAWING NO. LDW280-10972
EO NO. A3

ISSUED BY SALVADOR X7033 SECTION VDI GROUP NO. 335 PL 25

01 NAS 9-1100

LDW280-10973

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23029	LEM-6(36)	1EA
		LEM-5(35)	1EA
		LEM-4(34)	1EA
		LEM-3(33)	1EA
LEM	LDW280-23029	LTA-3 (13)	1EA
PART NO. LDW280-10973-11,-12,-13,-14,-15,-16,-17&-18		GAEC SCH NO. 32-5	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		200	300						
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REC INFO			
LAST DASH NO. USED	-18	PRIM NO. 215	UG/001 MP17		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II.

DRAWN BY	A.STERNBERG 3-23-66	RELIABILITY	
LAYOUT BY	G. WHSTON		
CHECKED BY	D.FASS 3-25-66		
GRLEADER	3/30/66		
VEH DESINT	3/30		
STRUCTURES	3/31	PROJ ENGR	4-5-66
STRUCTURES	3/31	REL GROUP	4-6-66
WEIGHTS	4-5		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP
ASCENT STAGE MID SEC +X253.50
DECK, +Z 22.00

SIZE	CODE IDENT NO.	
B	26512	LDW280-10973
SCALE	NONE	SHEET 1.00 OF 3

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10973-18	E	CLIP	AL ALLOY SH	QQ-A-283	7075	.063x2 3/4x2 7/8	T6	88	
		-17			AL ALLOY SH	QQ-A-283	7075	.063x2 3/4x2 7/8	T6		
		-16			AL ALLOY EXTR	QQ-A-277	7075-T6511	DIE#102853 x 4 5/8	SEE NOTE 2 CM		
		-15						DIE#102853 x 4 5/8			
		-14						DIE# 46203 x 4 3/8			
		-13						DIE# 46203 x 4 3/8			
		-12						DIE#102853 x 4 3/8			
		LDW280-10973 -11	E	CLIP	AL ALLOY EXTR	QQ-A-277	7075-T6511	DIE#102853 x 4 3/8	SEE NOTE 2 CM	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						CM	CHEM-MILL	LSP14-26100
						88	ANODIZE	LSP14-9030
						T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10973

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

01

NAS 9-1100

23

*

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO LEC280
EO NO. 295
CONTROL INFO NO. LDW280A0657

WHG 23.2 REV 3-65

* TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4 34

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10789	A3	SEE DRAWING
-10790	B1	
H 10792	C1	
-10796	A1	
-10798	B1	
-10800	B2	
H 10801	A1	
H 10802	B1	
H 10804	B1	
-10806	C1	
-10808	A1	
P 10809	B2	
-10811	B2	
-10813	B1	
-10814	B1	
-10815	A4	
-10817	A1	
-10838	B1	
-10846	C1	
-10927	B1	
-10934	A1	
-10953	B1	
-10954	A1	
-10955	A1	
-10961	A3	
P 10966	A4	
-10970	A1	
-10973	A1	
-10974	A1	
-10976	A1	
-10977	A1	
-10979	A1	
LDW280-10980	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ | CL III ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE: C
LE 10-8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38) LEM-9(39)	
LEM		LEM-10(40) LEM-11(41) LEM-12(42)	
LEM		LEM-13(43) LEM-14(44) LEM-15(45)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO

DISPOSITION OF PARTS: NOT EFF'D | REWORK | SCRAP

APPROVED BY: DP

DATE: 9/13/66

V.E.I. | SUPPORT | RELIAB. GROUP | GROUP LEADER | STRESS GROUP AW 9.21 | LIAISON ENGRG | PROJ ENGRG RWC 10-6-66 | GOVT AC 10-3-66

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO: LEO280

EO NO. 295

ISSUED BY L. DE TURRIS 7-18-66 X 1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 35

LDW280-10974

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23219	LEM-6(36)	1 EA
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
		LEM-1(31)	
		LTA-8(18)	
LEM	LDW280-23219	LTA-3(13)	1 EA
PART NO. LDW280-10974-11 ~~$~~-12		GAEC SCH NO. 31-3	

2

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	100		200		300				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED —
LAST DASH NO. USED -12

GRUMMAN REL^e INFO
PRIM NO. VE(001)
215 AP 12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/64 ±.010 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM NO 1
DOCUMENTATION TYPE II

DRAWN BY F. CURASI 3-16-66 RELIABILITY
LAYOUT BY —
CHECKED BY
GP. LDR. J. PUSATERI 3/17
VEH. DESIGN 3/17
STRUCT. 3-18
STRUCT. Hilderman 3-19
WEIGHTS 3-24
PROJ ENGR 3-18-66
REL GROUP 3-30

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE, CABIN - F/F - X247
HATCH ADAPTER

SIZE B
CODE IDENT NO. 26512
LDW280-10974
SCALE NONE
SHEET 1.00 OF 3

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10974-12	E	ANGLE	AL. ALLOY SHT.	QQ-A-355	2024	.040 × 2 3/4 × 5 1/4	T3/T42	88	
								LDW280-10974-11	E	ANGLE	AL. ALLOY SHT.	QQ-A-355	2024	.040 × 2 3/4 × 5 1/4	T3/T42	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T3/T42	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

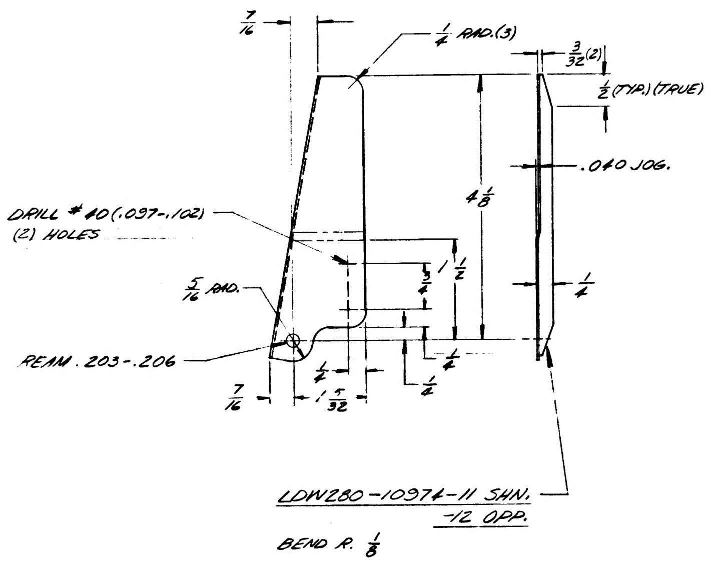
SIZE	CODE IDENT NO.	
B	26512	LDW280-10974

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



LDW280-10974-11 SHN.
-12 OPP.

BEND R. 1/8

TO BE REDRAWN. ON PRODUCTION FORMAT

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

LEM	SIZE C	CODE IDENT NO. 26512	LDW280-10974
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

LDW280-10974

01

LDW280-10975 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-54020	LEM-15(45)	1EA
		LEM-14(44)	1EA
		LEM 13(43)	1EA
		LEM-12(42)	1EA
		LEM-11(41)	1EA
		LEM-10(40)	1EA
		LEM-9(39)	1EA
		LEM-8(38)	1EA
		LEM-7(37)	1EA
	LDW280-54020	LEM-6(36)	1EA
	LDW280-54020	LEM-5(35)	1EA
	LDW280-54020	LEM-4(34)	1EA
	LDW280-53020	LEM-3(33)	1EA
LEM	LDW280-23020	LTA-3(13)	1EA

PART NO. LDW280-11-13 ≠-15
GAEC SCH NO. 324

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED —
LAST DASH NO. USED -15

GRUMMAN REL INFO A

PRIM NO.	LE(001)	
215	MP-A	9-2-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.010 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	PELLEGRINO 3/16	RELIABILITY	
LAYOUT BY	PELLEGRINO		
CHECKED BY	G.WHISTON 9/2		
GROUP LDR	R.V. PHILLIPS 4/4/66		
VEH DES INT	W. BISCHOFF 9/2		
STRUCTURE	FEB GW 9/6	PROJ ENGR	J. ALBER/RC 9/8/66
STRUCTURE	HILDERMAN 9/6	REL GROUP	A. CARAMANICA 9/9
WEIGHTS	D. ROBESCH 9/8		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TEE
ASCENT STAGE-MIDSECTION-PORTABLE LIFE SUPPORT SYSTEM-SUPPORT-X253 1/2

SIZE B
CODE IDENT NO. 26512
LDW280-10975 A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-10975 NO CHANGE 4-9-66

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
		RETRACED NO CHANGE LAST REVISION NO CHANGE SHEET 3(WAS)SHEET 1 SHEET SIZE C WAS H ADDED SHEET 1.00, 1.10 & 2.00 SHEET 1 OF 4(WAS) 1 OF 1 J PAWLITZ 8-15-66													
A	1	1.00, 1.10 2.00 & 3.00						EO#A1	IN FIELD & B/M: ADDED -13 & -15	LTA-3, LEM-3 THRU LEM-6	NOT	REQ'D	PAWLITZ 8-15-66 J.A.		
	2	1.00, 1.10							IN MOD. BLK, ON -11, -13 & -15, ADDED EFF LEM-7(37) THRU LEM-15(45) AND N/A FOR LEM-5(35) & LEM-6(36) WAS LDW280-55020 & LDW280-56020	LEM-5 THRU -15 EJR	NOT	REQD	JAEGGI 8-23-66 JK	GW	

	LTR	GROUP LDR	VEH.DES.INT	STRUCTURE	STRUCTURE	WEIGHTS	RELIABILITY	REL GROUP				
CHG APPROVED	A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10975	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10975-15	E	ANGLE	AL ALLOY EXTR	QQ-A-200/11	7075-T6511	EXTR#56697 X 1 9/16	FP NOTE 1	88	
								LDW280-10975-13	E	ANGLE	AL ALLOY EXTR	QQ-A-200/11	7075-T6511	EXTR#56697 X 1 9/16	FP NOTE 1	88	
								LDW280-10975-11	E	TEE	AL ALLOY EXTR	QQ-A-200/11	7075-T6511	EXTR#56697 X 1 9/16	FP NOTE 1	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030						
CM	CHEM-MILL	LSP14-26100						
FP	ZYGLO	MIL-I-6866						

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

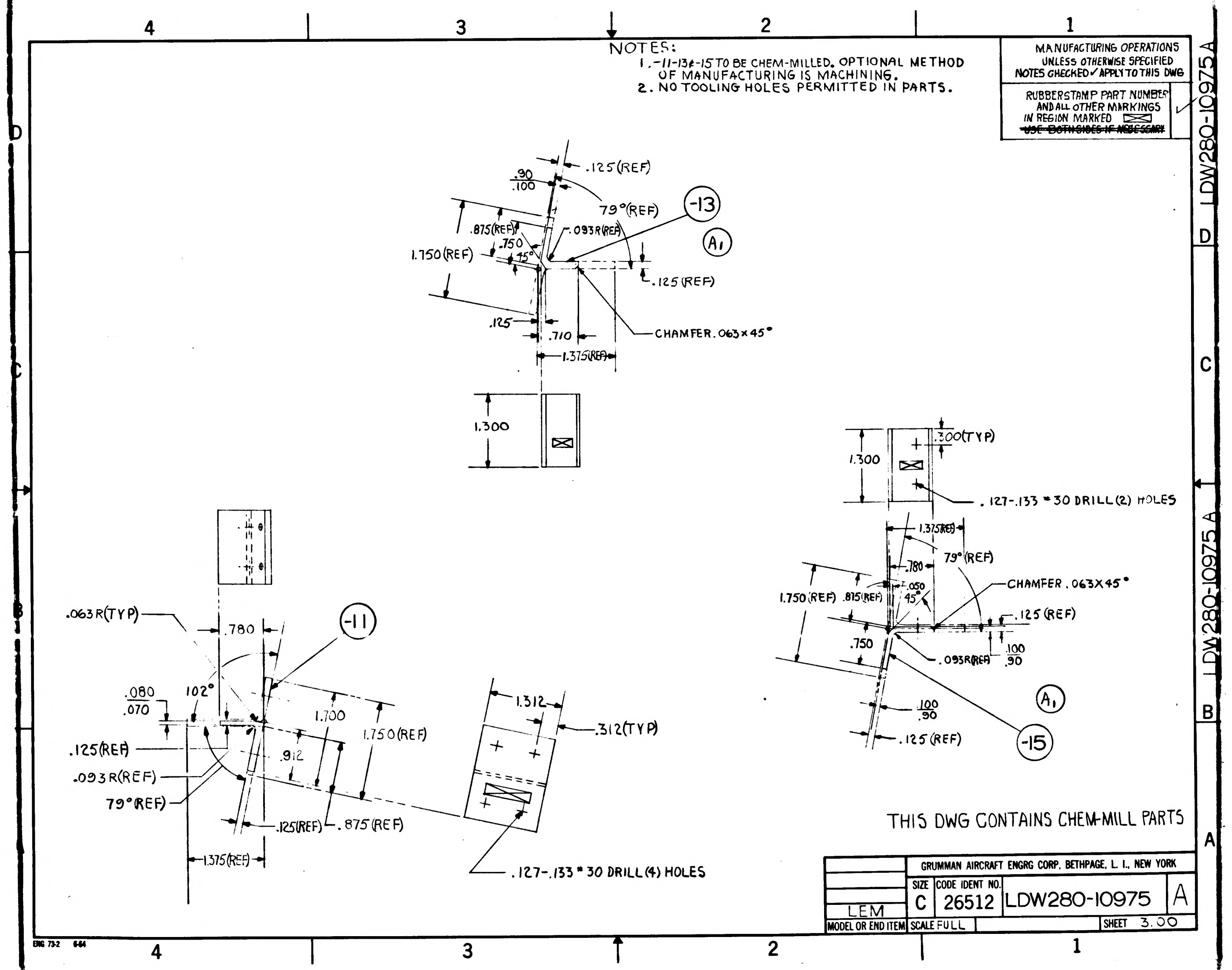
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10975	A
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



4
3
2
1
D
C
B
A
.125 (REF)
.90
.100
79° (REF)
-13
A1
.875 (REF)
.093 R (REF)
.750
45°
1.750 (REF)
.125 (REF)
.125
.710
1.375 (REF)
CHAMFER .063 × 45°
1.300
.300 (TYP)
.127-.133 # 30 DRILL (2) HOLES
1.375 (REF)
79° (REF)
.780
.050
45°
CHAMFER .063X45°
1.750 (REF)
.815 (REF)
.125 (REF)
.750
.093 R (REF)
.100
.90
A1
.100
.90
.125 (REF)
-15
.063 R (TYP)
.780
-11
.080
.070
102°
1.700
1.750 (REF)
.125 (REF)
.912
.093 R (REF)
79° (REF)
.125 (REF)
.875 (REF)
1.375 (REF)
1.312
.312 (TYP)
.127-.133 # 30 DRILL (4) HOLES
ENG 73-2 6-64

NOTES:

1. -11-13&-15 TO BE CHEM-MILLED. OPTIONAL METHOD OF MANUFACTURING IS MACHINING.
2. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

RUBBERSTAMP PART NUMBER ✓
AND ALL OTHER MARKINGS
IN REGION MARKED ⊠
~~USE BOTH SIDES IF NECESSARY~~

THIS DWG CONTAINS CHEM-MILL PARTS

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	C	26512	LDW280-10975	A
	SCALE FULL			SHEET 3.00

LDW280-10975 A

LDW280-10975 A

01

NAS 9-1100

LDW280-10976

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23213	LEM-6(36)	1 EA
	LDW280-23213	LEM-5(35)	1 EA
	LDW280-23213	LEM-4(34)	1 EA
	LDW280-23213	LEM-3(33)	1 EA
	LDW280-23213	LEM-2(32)	1 EA
	LDW280-23213	LEM-1(31)	1 EA
LEM	LDW280-23213	LTA-3(13)	1 EA
PART NO. LDW280-10976-13, -15 & -16		GAEC SCH NO. 32-2	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23213	LEM-6(36)	3
	LDW280-23213	LEM-5(35)	3
	LDW280-23213	LEM-4(34)	3
	LDW280-23213	LEM-3(33)	3
	LDW280-23213	LEM-2(32)	3
	LDW280-23213	LEM-1(31)	3
LEM	LDW280-23213	LTA-3(13)	3
PART NO. LDW280-10976-11		GAEC SCH NO. 32-2	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00				
REV								
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED A
LAST DASH NO. USED -16
GRUMMAN REL^C INFO
PRIM NO. CE001 215 MP12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS — ANGLES ±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II
DRAWN BY HERB. SCHWETER 3/17/66
RELIABILITY
LAYOUT BY J. KORYKORA
CHECKED BY 3-21-66
GR LEADER 3/21/66
VEH DES INT 3/21
STRUCTURES 3/21
STRUCTURES Hilderman 3/22
WEIGHTS A. Rabeski 3-25
PROJ ENGR 3-28-66
REL GROUP Caramanico 3-30

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE ~ MID SECT. RCS
MANIFOLD CONTROL VALVES SUPPORT

SIZE B
CODE IDENT NO. 26512
LDW280-10976
SCALE NONE
SHEET 1.00 OF 3

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10976-16	E	ANGLE	AL ALY EXTR	QQ-A-277	7075-T6511	DIE#AND10134×$2\frac{3}{8}$	NONE	88	
		-15						DIE#AND10134×$2\frac{3}{8}$			
		-13						DIE#AND10134×$2\frac{3}{4}$			
		LDW280-10976-11	E	ANGLE	AL ALY EXTR	QQ-A-277	7075-T6511	DIE#AND10134×$2\frac{3}{4}$	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10976

SCALE NONE SHEET 2.00

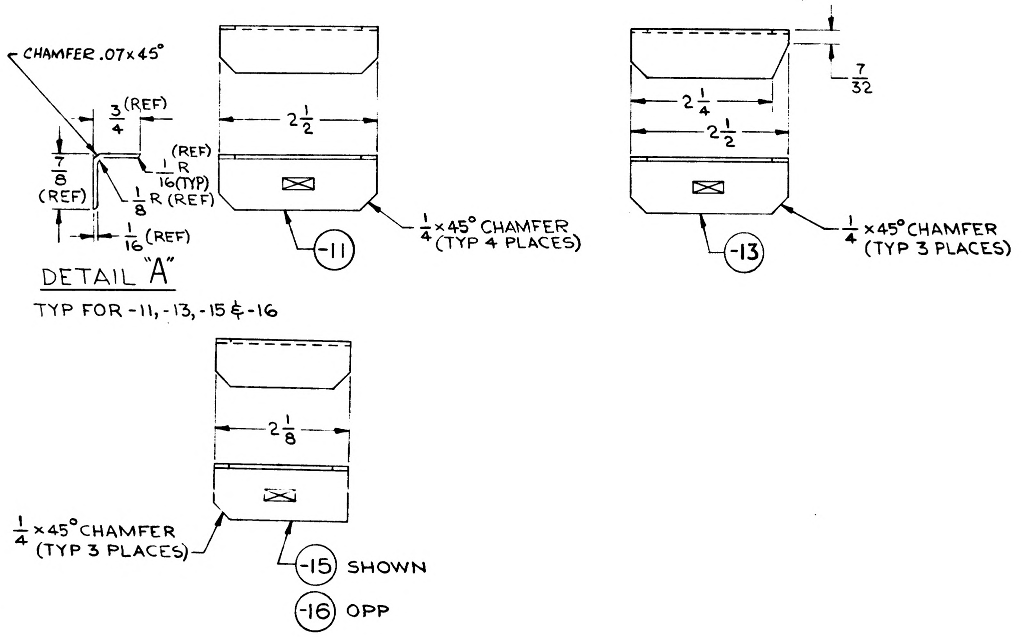
ENG 77.2 7-65

01

NAS 9-1100

NOTE:

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. ABBREVIATIONS ARE IN ACCORDANCE WITH MIL-STD-12-B EXCEPT AS NOTED: RCS (REACTION CONTROL SYSTEM)


CHAMFER .07 x 45°
3/4 (REF)
7/8 (REF)
1/16 R (REF) (TYP)
1/8 R (REF)
1/16 (REF)
DETAIL "A"
TYP FOR -11, -13, -15 & -16
2 1/2
1/4 x 45° CHAMFER (TYP 4 PLACES)
-11
7/32
2 1/4
2 1/2
1/4 x 45° CHAMFER (TYP 3 PLACES)
-13
2 1/8
1/4 x 45° CHAMFER (TYP 3 PLACES)
-15 SHOWN
-16 OPP

01

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBERSTAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LEM	C	26512	LDW280-10976
	SCALE FULL		SHEET 3.00

LDW280-10976

LDW280-10976

23 ENG 32.2 REV 3-65 *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO LE0280
EO NO. 295
CONTROL INFO NO. LDW280A 0657

* TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4.34

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10789	A3	SEE DRAWING
✓ -10790	B1	↑
✓ H 10792	C1	
✓ -10796	A1	
✓ -10798	B1	
✓ -10800	B2	
✓ H 10801	A1	
✓ H 10802	B1	
✓ H 10804	B1	
✓ -10806	C1	
✓ -10808	A1	
✓ P 10809	B2	
✓ -10811	B2	
✓ -10813	B1	
✓ -10814	B1	
✓ -10815	A4	
✓ -10817	A1	
✓ -10838	B1	
✓ -10846	C1	
✓ -10927	B1	
✓ -10934	A1	
✓ -10953	B1	
✓ -10954	A1	
✓ -10955	A1	
✓ -10961	A3	
✓ P 10966	A4	
✓ -10970	A1	
✓ -10973	A1	
✓ -10974	A1	
✓ -10976	A1	
✓ -10977	A1	
-10979	A1	↓
LDW280-10980	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE: C — LE 108

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37)/LEM-8(38)/LEM-9(39)	
LEM		LEM-10(40)/LEM-11(41)/LEM-12(42)	
LEM		LEM-13(43)/LEM-14(44)/LEM-15(45)	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

APPROVED BY				—	AW		PM	AC
DATE	9/13/66			—	9.?		10-6-66	10-3-66
	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENG'G	PROJ ENGRG	GOVT

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO. LE0280

EO NO. 295

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO 282 PL 35

01

NAS 9-1100

ENG 32.1 REV 3-65 6

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER *

DWG. NO. LDW280-10976 EO NO. A2
CONTROL INFO NO. LDW280A7595

FOR -11 & -13 REMOVE LM-3(33) THRU LM-15(45) EFFECTIVITY

FOR -15 & -16 EFF LM-3(33) THRU LM-15(45) N/A SHOULD BE LDW280-53213 (WAS LDW280-23213) QTY TO REMAIN THE SAME

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD 1426 ok CCA580 5

REASON FOR EO: ADDITION OF (4) RCS INTERCONNECTS REQUIRES NEW INSTL LCR 1426

DESCRIPTION OF EO: REMOVED -11 & -13 REVISED N/A FOR -15 & -16 N/A WAS LDW280-23213

GAEC EO RELEASE C JL 7-5

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3(33) THRU	LM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK SCRAP ✓

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
APPROVED BY	Jap			F.N.R	RH			Bott
DATE	7/1/67			7-1-67	7/1		7/1/67	7-5-67

PRIORITY: C
DRAWING TITLE: ASCENT STAGE ANGLE - MID SECT RCS MANIFOLD CONTROL VALVES SUPPORT
DRAWING NO.: LDW280-10976
EO NO.: A2

ISSUED BY G. BARNES / F. DeRESPINIS X1153 SECTION VDI GROUP NO. 335 PL 25

01 NAS 9-1100

C

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO.	LDW280-10976	EO NO.	A3
CONTROL INFO NO.	LDW280A8067		

THIS IS A REVISION TO E.O. A2

" FOR -11, -13, -15 & -16 REMOVE LM-3(33) THRU LM-15(45) EFFECTIVITY "

(WAS) " FOR -11 & -13 REMOVE LM-3(33) THRU LM-15(45) EFFECTIVITY "

(REMOVE CALLOUT) " FOR -15 & -16 EFF: LM-3(33) THRU LM-15(45)
N/A SHOULD BE LDW280-53213 (WAS
LDW280-23213) QTY TO REMAIN THE SAME ".

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	✓	LCD 1426 CCA580

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE ® C
CORRECT EO A2 & REMOVE -11, -13, -15, & -16.	REVISED E.O. A2 & REMOVED -11, -13, -15, & -16. WAS REMOVED -11 & -13.	JK 7/26/67

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3(33)	
		THRU	
LM		LM-15(45	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY							
✓			✓	DATE	7/24/67			7-22-67	7-21		7/26
REVISE DWG	RECORD EO	REWORK	SCRAP		VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	ANGLE A/S~MID SECT~RCS MANIFOLD VALVE SPT	LDW280-10976	A3

7/24/67
ISSUED BY D. KLINGENER X7033 SECTION VDI GROUP NO. 335 PL 25

01 NAS 9-1100

LDW280-10977

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23029	LEM-6(36)	2
↑	↑	LEM-5(35)	↑
		LEM-4(34)	
↓	↓	LEM-3(33)	↓
LEM	LDW280-23029	LTA-3(13)	2
PART NO. LDW280-10977-15 & -16		GAEC SCH NO. 32-5	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23029	LEM-6(36)	1 EA
↑	↑	LEM-5(35)	↑
		LEM-4(34)	
↓	↓	LEM-3(33)	↓
LEM	LDW280-23029	LTA-3(13)	1 EA
PART NO. LDW280-10977-11,-12,-13 & -14		GAEC SCH NO. 32-5	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00
REV				
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -16

GRUMMAN REL INFO

PRIM NO. 215 VE(001) MP12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM #1

DOCUMENTATION TYPE II

DRAWN BY	JESAITIS 3-23-66	RELIABILITY	
LAYOUT BY	G.WHISTON 3-16-66		
CHECKED BY	3-24-66		
GR LEADER	3/28/66		
VEH DES INT	3/29		
STRUCTURE	BW 3/31	PROJ ENGR	4-5-66
STRUCTURE	Wilderman 3/31	REL GROUP	4-6-66
WEIGHTS	4-5		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP
ASCENT STAGE, MID SECTION
X253.50 DECK -Z 22

SIZE B

CODE IDENT NO. 26512

LDW280-10977

SCALE NONE

SHEET 1.00 OF 3

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10977-16	F	CLIP	AL ALLOY EXTR	QQ-A-277	7075-T6	DIE#102853X4¼	NOTE 2	88	4A
		-15	↕	↕	↕	↕	↕	DIE#102853X4¼	↕	↕	4A
		-14	↕	↕	↕	↕	↕	DIE#102853X4¼	↕	↕	4B
		-13	↕	↕	AL ALLOY EXTR	QQ-A-277	7075-T6	DIE#102853X4¼	NOTE 2	↕	4B
		-12	↕	↕	AL ALLOY SH	QQ-A-233	7075	.050X2½X2¾	T6	↕	4C
		LDW280-10977-11	E	CLIP	AL ALLOY SH	QQ-A-283	7075	.050X2½X2¾	T6	88	4C

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B

CODE IDENT NO. 26512

LDW280-10977

SCALE NONE

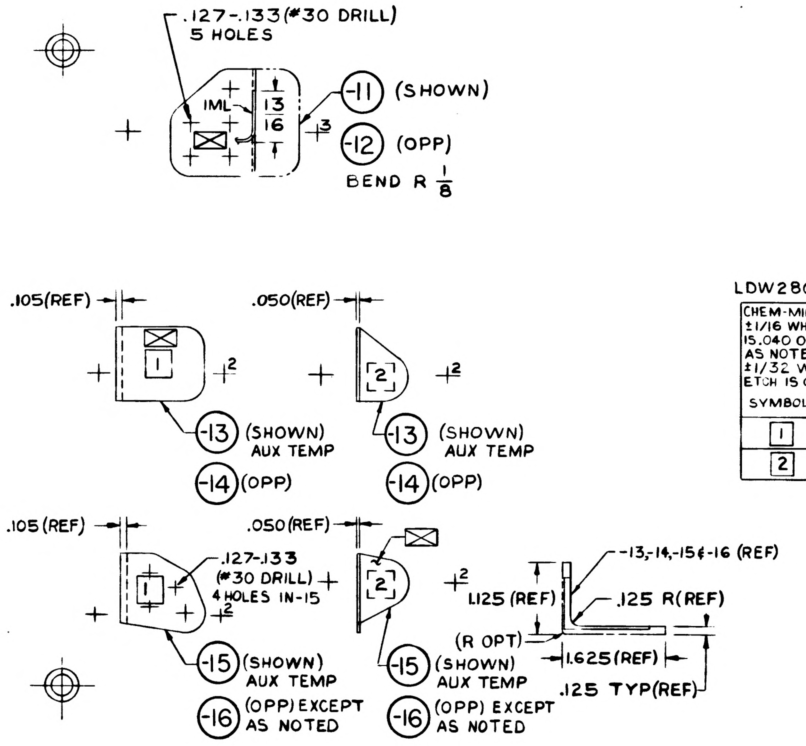
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. - NO TOOLING HOLES PERMITTED IN PARTS.
2. - FOR -13 THRU -16 OPTIONAL METHOD OF MANUFACTURING IS MACHINING.


.127-.133 (#30 DRILL)
5 HOLES
IML
13
16
3
-11 (SHOWN)
-12 (OPP)
BEND R 1/8
.105(REF)
.050(REF)
1
2
-13 (SHOWN) AUX TEMP
-14 (OPP)
-13 (SHOWN) AUX TEMP
-14 (OPP)
.105 (REF)
.050(REF)
.127-.133 (#30 DRILL) 4 HOLES IN -15
-15 (SHOWN) AUX TEMP
-16 (OPP) EXCEPT AS NOTED
-15 (SHOWN) AUX TEMP
-16 (OPP) EXCEPT AS NOTED
-13,-14,-15 & -16 (REF)
1.125 (REF)
.125 R(REF)
(R OPT)
1.625(REF)
.125 TYP(REF)
.15
10

LDW280-10977-13,-14,-15 & -16

CHEM-MILL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	.050±.005	.075 REF
2	.105±.005	.025 REF

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-10977

LDW280-10977

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LEM	C	26512	LDW280-10977
	SCALE FULL		SHEET 3.00

FOR PHOTO REPRODUCTION

NAS 9-1100

23

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 22.2 REV 3-65

*

DWG. NO LE0280

EO NO. 295

CONTROL INFO NO. LDW280A0657

* TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4.34

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10789	A3	SEE DRAWING
-10790	B1	
H 10792	C1	
-10796	A1	
-10798	B1	
-10800	B2	
H 10801	A1	
H 10802	B1	
H 10804	B1	
-10806	C1	
-10808	A1	
P 10809	B2	
-10811	B2	
-10813	B1	
-10814	B1	
-10815	A4	
-10817	A1	
-10838	B1	
-10846	C1	
-10927	B1	
-10934	A1	
-10953	B1	
-10954	A1	
-10955	A1	
-10961	A3	
P 10966	A4	
-10970	A1	
-10973	A1	
-10974	A1	
-10976	A1	
-10977	A1	
-10979	A1	
LDW280-10980	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ	CL III ENGRG CHG	CL I ENGRG CHG

REASON FOR EO	DESCRIPTION OF EO	GAEC C EO RELEASE
ADDITIONAL REQUIREMENTS	FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.	LE 108

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37), LEM-8(38)	LEM-9(39)
LEM		LEM-10(40), LEM-11(41)	LEM-12(42)
LEM		LEM-13(43), LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
REVISE DWG	RECORD EO	REMAIN	SCRAP	DATE	9/13/66			—	9.V		10-6-66	10-3-66
✓		NOT REQ'D			VD.I	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	NOTED	LE0280	295

ISSUED BY L. DETURRIS 7-18-66 X 1441 SECTION VEHICLE DESIGN INT. GROUP NO 280 PL 35

01

NAS 9-1100

LDW280-10978 B

LFM

SHIP

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23278	LM-6(36)	2EA

PART NO. LDW280-10978-3 & 4

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM-50	LDW280-23278	PA-1(47)	1EA
LEM	LDW280-23278	LEM-15(45)	2E
		LEM-14(44)	2E
		LEM-13(43)	2E
		LEM-12(42)	2E
		LEM-11(41)	2E
		LEM-10(40)	2E
		LEM-9(39)	2E
		LEM 8(38)	2EA
LEM	LDW280-23278	LEM-7(37)	2EA
LTT430-20630	LDW280-28328	1 & SUBQ	2EA
LTT430-20620	LDW280-28328	1 & SUBQ	2EA
LEM	LDW280-23278	LEM-5(35)	2 EA
		LEM-4(34)	2 EA
		LEM-3(33)	2 EA
		LEM-2(32)	2 EA
LEM	LDW280-23278	LEM-1(31)	2 EA
LEM	LDW280-23278	LTA-3(13)	2 EA

PART NO. LDW280-10978-1 & -2

GAEC SCH NO. 32-6 35-

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00	4.00				
REV	B	B	B	B	B				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -16

GRUMMAN REL INFO B

PRIM NO. 215 LK(001) MP-16B-6/26/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.010 ±0°30'

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM 1

DOCUMENTATION TYPE II (5)

DRAWN BY	MASSEY 3-24-66	RELIABILITY	
LAYOUT BY	MASSEY 3-14-66		
CHECKED BY	ACA		
GP LEADER	R/PHILLIPS 3-25-66		
VDI	W.BISCHOFF 3/26		
STRUCTURES	F B	PROJ ENGR	J.ALBER/RC 4-5-66
STRUCTURES	R.HILDERMAN 4-4	REL GROUP	BOTTI 4-6-66
WEIGHTS	D.ROBESCH 4-5		

GRUMMAN AIRCRAFT ENGRG CORP.
BETHPAGE, L. I., NEW YORK

TORQUE BOX ASSEMBLY
ASCENT STAGE-MID-SECTION
REACTION CONTROL LINE SUPPORT

SIZE B

CODE IDENT NO. 26512

LDW280-10978 B

SCALE NONE

SHEET 1.00 OF 5

ENG 77.1 12-65

SUPERSEDES LDW280-10978 (NO CHANGE) 8-5-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
									RETRACED NO CHANGE, LAST REVISION NO CHANGE, LOFTED DWG WAS DIMENSIONED DWG; ADDED SHS 1.10, 2.00 & 3.00; SH 1.00 OF 4 WAS: 1 OF 1. CALDARELLA 8-5-66						
A	1	1.10 & 3.00						EO A1	ADDED 1 DIA HOLE IN -11 & -12 & LOC. DIMS.	NOTED	-11 -12		CALDARELLA 8-5-66		
	2	1.00, 1.10						LE0280-104	ADDED EFF OF LTT430-20620 AND LTT430-20630.		NOT REQD				
	3	2.00						EO A3	IN -2 B/M ADDED (40) GR500A-5C & (12) NAS697A08.				JAEGGI 8/19/66		
	4	3.00							ADDED NOTE #3.						
	5	1.00							FOR -1 & -2, ADDED EFF. LEM-7(37) THRU LEM-15(45).	LEM-7 THRU-15					
B	1	1.10 3.00						EO B1	IN FLD FOR -12, ADDED 1" DIA HOLE	NOT REQD	NOT	REQD	MASONE 6-25-68		
	2	1.00 1.10					✓	EO B2	FOR -1 & -2 REMOVED NEXT ASSY LDW280-23278 (LTA-8)	LTA-8(18)		-1 & -2			
	3	1.00 1.10		LFM-50		✓		LE0280-834 LCD 2019 CCA 667	FOR -1 & -2 ADDED PA-1 (47) EFF	PA-1 (47)	NOT	REQD			
	4	1.00, 1.10 2.00, 3.00 4.00				✓		LCD 2771	ADDED -3, -4, -15 & -16. REMOVED LM-6 FROM -1 & -2 ADDED SH 4.00	LM-6		-1 & -2			

CHG APPROVED

LTR	GROUP LDR	VEH. DES. INT.	STRUCT	STRUCT.	WEIGHTS	RELIABILITY				
A										
B	F.R. 6/26	6/26/68	6/26/68	6/26/68						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10978	B
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
									RETRACED NO CHANGE, LAST REVISION NO CHANGE, LOFTED DWG WAS DIMENSIONED DWG; ADDED SHS 1.10, 2.00 & 3.00; SH 1.00 OF 4 WAS: 1 OF 1. CALDARELLA W.M. 8-5-66						
A	1	1.10 & 3.00						EO A1	ADDED 1 DIA HOLE IN -11 & -12 & LOC. DIMS.	NOTED	-11 -12		CALDARELLA 8-5-66		
	2	1.00, 1.10						LE0280-104	ADDED EFF OF LTT430-20620 AND LTT430-20630.		NOT REQD				
	3	2.00						EO A3	IN -2 B/M ADDED (40) GR500A-5C & (12) NAS697A08.				JAEGGI 8/19/66		
	4	3.00							ADDED NOTE #3.						
	5	1.00							FOR -1 & -2, ADDED EFF. LEM-7(37) THRU LEM-15(45).	LEM-7 THRU-15					
B	1	1.10 3.00						EO B1	IN FLD FOR -12, ADDED 1" DIA HOLE	NOT REQD	NOT	REQD	MASONE 6-25-68		
	2	1.00 1.10					✓	EO B2	FOR -1 & -2 REMOVED NEXT ASSY LDW280-23278 (LTA-8)	LTA-8(18)		-1 & -2			
	3	1.00 1.10		LFM-50		✓		LE0280-834 LCD 2019 CCA 667	FOR -1 & -2 ADDED PA-1 (47) EFF	PA-1 (47)	NOT	REQD			
	4	1.00, 1.10 2.00, 3.00 4.00				✓		LCD 2771	ADDED -3, -4, -15 & -16. REMOVED LM-6 FROM -1 & -2 ADDED SH 4.00	LM-6		-1 & -2			

CHG APPROVED

LTR	GROUP LDR	VEH. DES. INT.	STRUCT	STRUCT.	WEIGHTS	RELIABILITY		
A								
B	F.D.R. 6/26	6/25/68	6/26/68	6/26				

ENG 77.16 3-66

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10978	B
SCALE NONE			SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY -4	-3	-2	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
12	12	12	12		NAS697A08	E	NUT PLATE	STD PART						
					MS20426AD3		RIVET	STD PART						
40	40	40	40		GR500A-5C		RIVET	GRUMMAN STD						
1					LDW280-10978-16		CHANNEL	AL ALLOY SH	QQ-A-250/4	2024-T3	.040X6x 20	NONE	88	
	1				-15		CHANNEL				.040X6x 20			
1		1			14		CHANNEL				.040×6×18 3/8			
	1		1		-13		CHANNEL				.040×6×18 3/8			
		1			-12		CHANNEL				.040×6×19 3/8			
			1		-11		CHANNEL	AL ALLOY SH	QQ-A-250/4	2024-T3	.040×6×19 3/8	NONE	88	
					-4		TORQUE BOX ASSY					NONE	NONE	
					-3		TORQUE BOX ASSY					NONE	NONE	
					-2		TORQUE BOX ASSY					NONE	NONE	
					LDW280-10978-1	E	TORQUE BOX ASSY					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B | CODE IDENT NO. 26512 | LDW280-10978 | B

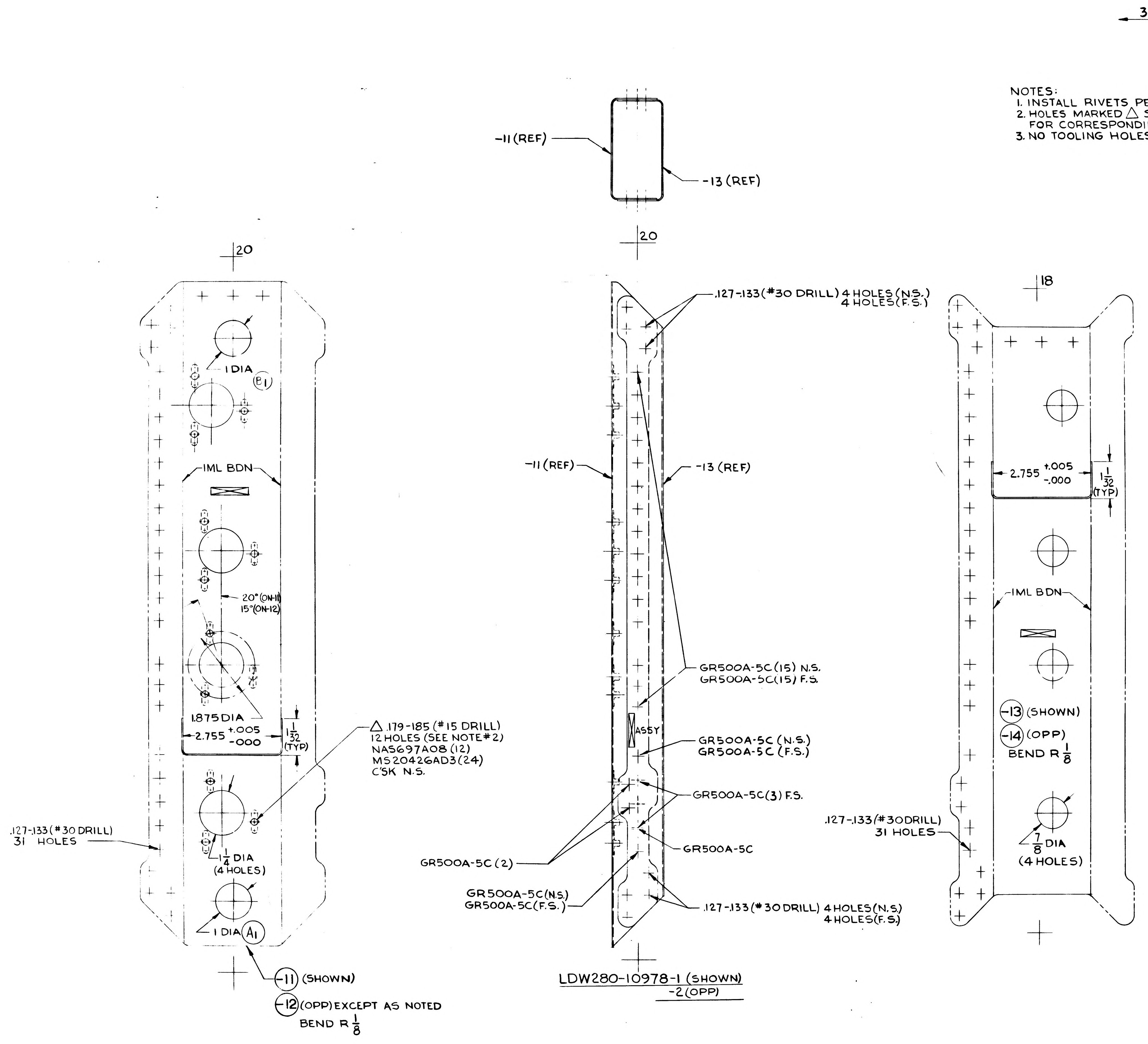
SCALE NONE | SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. INSTALL RIVETS PER LSP14-15303.
2. HOLES MARKED △ SEE DWG LSC310-401 FOR CORRESPONDING HOLE PATTERN.
3. NO TOOLING HOLES PERMITTED IN PARTS.



35
30
-11 (REF)
-13 (REF)
20
20
18
1 DIA
B1
IML BDN
20° (ON-11)
15° (ON-12)
1.875 DIA
2.755 +.005 -.000
1 1/32 (TYP)
△ .179-.185 (#15 DRILL)
12 HOLES (SEE NOTE #2)
NAS697A08 (12)
MS20426AD3 (24)
C'SK N.S.
.127-.133 (#30 DRILL)
31 HOLES
1 1/4 DIA
(4 HOLES)
1 DIA
A1
-11 (SHOWN)
-12 (OPP) EXCEPT AS NOTED
BEND R 1/8
.127-.133 (#30 DRILL) 4 HOLES (N.S.)
4 HOLES (F.S.)
-11 (REF)
-13 (REF)
GR500A-5C (15) N.S.
GR500A-5C (15) F.S.
ASSY
GR500A-5C (N.S.)
GR500A-5C (F.S.)
GR500A-5C (3) F.S.
GR500A-5C
GR500A-5C (2)
GR500A-5C (N.S.)
GR500A-5C (F.S.)
.127-.133 (#30 DRILL) 4 HOLES (N.S.)
4 HOLES (F.S.)
LDW280-10978-1 (SHOWN)
-2 (OPP)
2.755 +.005 -.000
1 1/32 (TYP)
IML BDN
-13 (SHOWN)
-14 (OPP)
BEND R 1/8
.127-.133 (#30 DRILL)
31 HOLES
7/8 DIA
(4 HOLES)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD 10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	✓
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

01 NAS 9-1100

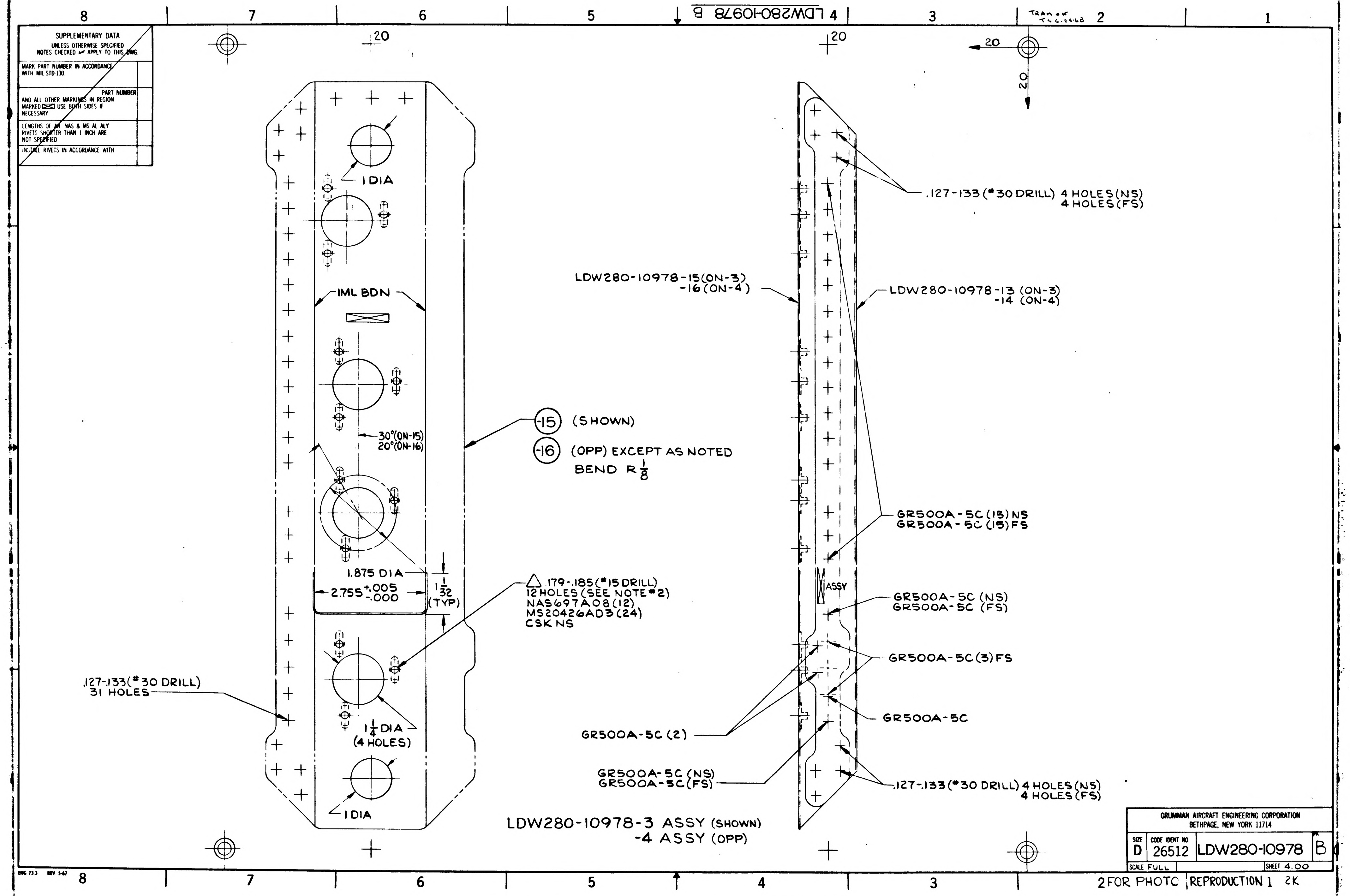
GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

LEM	SIZE E	CODE IDENT NO. 26512	LDW280-10978	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

LDW280-10978

FOR PHOTO REPRODUCTION

K2



8
7
6
5
4
3
2
1
LDW280-10978 B
20
20
20
20
I DIA
IML BDN
30°(ON-15)
20°(ON-16)
1.875 DIA
2.755 +.005 -.000
1 1/32 (TYP)
.127-.133(#30 DRILL)
31 HOLES
1 1/4 DIA
(4 HOLES)
I DIA
-15 (SHOWN)
-16 (OPP) EXCEPT AS NOTED
BEND R 1/8
△ .179-.185(#15 DRILL)
12 HOLES (SEE NOTE #2)
NAS697A08(12)
MS20426AD3(24)
CSK NS
LDW280-10978-3 ASSY (SHOWN)
-4 ASSY (OPP)
.127-.133 (#30 DRILL) 4 HOLES (NS)
4 HOLES (FS)
LDW280-10978-15 (ON-3)
-16 (ON-4)
LDW280-10978-13 (ON-3)
-14 (ON-4)
GR500A-5C (15) NS
GR500A-5C (15) FS
ASSY
GR500A-5C (NS)
GR500A-5C (FS)
GR500A-5C (3) FS
GR500A-5C
GR500A-5C (2)
GR500A-5C (NS)
GR500A-5C (FS)
.127-.133 (#30 DRILL) 4 HOLES (NS)
4 HOLES (FS)

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714

SIZE	CODE IDENT NO.		
D	26512	LDW280-10978	B
SCALE FULL		SHEET 4.00	

2 FOR PHOTO REPRODUCTION 1 2K

ENG 73 3 REV 5-67

01 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW 280-10978 | EO NO. C1
CONTROL INFO NO. LDW 280B-4255

IN M/B ADD LDW280-10973-1 & -2 N.A. LDW 280-23278
(2) EA. REQ'D MODULE

EFF. LM-6 (36)

SWIP

(DRAFTSMAN NOTE: -1 & -2, -3 & -4 ASSY ARE ALL EFF. FOR LM-6(36))

DETAIL SPEC REQ ☐ | CL II ENGRG CHG ☐ | CL I ENGRG CHG ✓ | LCD 2771 | (5)

REASON FOR EO	REVISE OX/FUEL RATIO RCS SYSTEM SWIP II	DESCRIPTION OF EO	ADDED -1 & -2 BOX ASSY EFF LM-6 (36)	GAEC EO RELEASE	C H.F. 7/2/68

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-6 (36)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS									
✓		NOT	REQD	APPROVED BY	[illegible]			FNR	[illegible]		[illegible]
				DATE	6/27/68			6/27/68	6/28/68		6/28/68 7-2-68
REVISE DWG	RECORD EO	REWORK	SCRAP		VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
	TORQUE BOX ASSY - A/S MID SECT. RCS LINE SUPP'T.	LDW280-10978	C1

6-28-68
ISSUED BY G. KOURY SECTION VDI GROUP NO. 335 PL 25

01
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER
ENG 32.1 REV 3-65

DWG. NO LDW280-10978		EO NO. C2
CONTROL INFO NO. LDW280B6261		

IN M/B TO -3 & -4 REMOVE LM6(36) & ADD SEE NOTE *

IN F/D ADD NOTE * EFFECTIVITY OF LFM IS TO BE DETERMINED

ASSIGN NEXT AVAILABLE NOTE NO. TO NOTE *

LFM

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 7771 FrD H-044 PKG. 3 ⑤

REASON FOR EO	DESCRIPTION OF EO	EO RELEASE 3/8
REVISE OX/FUEL RATIO IN RCS SYSTEM	IN M/B TO -3 & -4 REMOVED LM6(36) & ADDED SEE NOTE * IN F/D ADDED NOTE *	JK 3/11/69

MODEL	EFFECTIVITY M E.I. ~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 374	*	
		LM6(36)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓ REVISE DWG	RECORD EO	NOT REWORK	REQ'D SCRAP

APPROVED BY				FDR				
DATE	3/6/69			3/4/69	3/6/69		3/7/69	3-7-69
	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG	GAP

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	TORQUE BOX ASS'Y - A/S M/S RCS LINE SUPPORT	LDW280-10978	C2

3-18-69
ISSUED BY P. WEISSLITZ x86048 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

AAP

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10978
EO NO. C3
CONTROL INFO NO. LDW280B7994

"THIS EO REVISES EO C2"

IN MOD BLOCK (SCRAP -3 & -4 ASSY)
REMOVE:
LFM374, N/A LDW280-23278, EFF: SEE NOTE ✱, 2 EA. REQD/MOD.
IN F/D REMOVE NOTE ✱.

EO REF ONLY: NOTE ✱ (WHICH WAS ADDED PER EO C2) READS AS FOLLOWS:
✱ EFFECTIVITY OF LFM IS TO BE DETERMINED.

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD 5010 PKG. 10 CCA 1179 ⑤

REASON FOR EO: RECONFIGURATION OF ENGINE & STORAGE OF 1.3 O/F RCS HARDWARE

DESCRIPTION OF EO: THIS EO REVISES EO C2
IN M/B FOR -3 & -4 REMOVED: LFM374, N/A LDW280-23278
EFF: SEE NOTE ✱, 2 EA REQD/MOD. IN F/D REMOVED NOTE ✱.

GAEC EO RELEASE: 7-22-69
HF 7/23/69

MODEL	EFFECTIVITY M		
	EI ~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 374		

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK; SCRAP -4 -3

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY								
DATE	7/17/69			7/1/69	7/1/69		7/22/69	7/23/69

PRIORITY: C

DRAWING TITLE: TORQUE BOX ASSY. A/S M/S RCS LINE SUPPORT

DRAWING NO. LDW280-10978 EO NO. C3

7-30-69
ISSUED BY PHIL MARTELLO X86048 SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01
NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00,1.10						LEO 280-295	FOR -11, ADDED LM-7 THRU LM-15 EFF. (ADDED SH.-1.10)	LM-7 THRU LM-15	NOT	REQ'D.	F. BUBBICO. 11-11-68.	BC	
	2	1.00,1.10, 2.00,3.00						EO-A2 LCD-820	FOR -11, EFF. WAS LTA-3, LTA-8, LM-1 THRU. LM-15, & ADDED -13.	LM-3THRU LM-15		-11			
	3	1.00,1.10.		LFM-54 A		✓		EO-A3 LCD-2011 LCD-2175	IN M/B OF -11, ADDED LM-3 THRU LM-15 & DELETED LM-1. IN M/B OF -13, ADDED LM-1 & DELETED LM-3 THRU. LM-15.	LM-1, LM-3 THRU. LM-15		-13			
	4	1.00,1.10				✓		LEO280-1129 LCD-3357	TO -11, ADDED END ITEM LDW420-11262, S/N-14.	S/N 14	NOT	REQ'D			
	5	1.00,1.10				✓		LEO280-1131 LCD-3357	TO-11, ADDED END ITEM LDW420-11262, S/N-15 & 16	S/N^S 15&16	NOT	REQ'D.			
	6	1.00,1.10		LFM-269		✓		LEO280-1149 LCD-3501 Ⓟ	FOR -11, N/A - WAS LDW280H23060 FOR LM-3	LM-3	NOT	REQ'D			

CHG APPROVED	LTR	GROUP LDR	VEH.DES.INT.	STRUCT.	STRUCT.	WEIGHTS	RELIABILITY
	A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10979	A Ⓟ
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

LDW280-10979

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280H23060	LEM-6 (36)	1
↑	↑	LEM-5 (35)	1
		LEM-4 (34)	1
		LEM-3 (33)	1
		LEM-2 (32)	1
		LEM-1 (31)	1
↓	↓	LTA-8 (18)	1
LEM	LDW280H23060	LTA-3 (13)	1

PART NO. LDW280-10979-11
GAEC SCH NO. 31-2

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED
LAST DASH NO. USED -11

GRUMMAN REL^c INFO
PRIM NO. 215 | LE(001) MP12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II.

DRAWN BY	A. STERNBERG 3-17-66	RELIABILITY	
LAYOUT BY	BONELLI 2-23-66		
CHECKED BY	3-19-66		
GR LEADER	J. Pusateri 3/19		
VEH DES INT	3/9		
STRUCTURES	GW 3-19	PROJ ENGR	3-30-66
STRUCTURES	3/24	REL B GROUP	Botts 3-31-66
WEIGHTS	DJL 3-24		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DOUBLER
ASCENT STAGE-CABIN FLOOR x215.0

SIZE B | CODE IDENT NO. 26512 | LDW280-10979
SCALE NONE | SHEET 1.00 OF 3.

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10979-11	E	DOUBLER	AL ALY SH	QQ-A-283	7075-T6	SEE NOTE 2×5×24	CM	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						CM	CHEM-MILL	LSP14-26100

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-10979
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

LDW280-10979

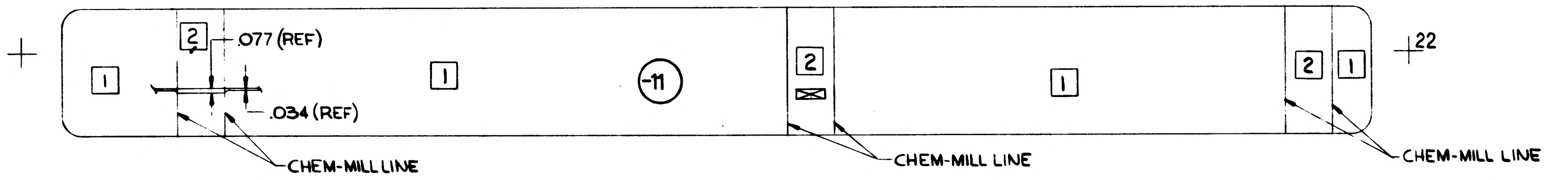
TRAM. O.K.
TS 3-6

NOTES

1. NO TOOLING HOLE PERMITTED IN PART.
2. THICKNESS OF RAW MATERIAL BEFORE ETCHED SEQUENSE SHALL BE .090±.002. -11 TO BE SIZED TO .077±.002 THICKNESS SHALL NOT VARY BY MORE THAN ±.002 TOTOL OVER ENTIRE SURFACE.
3. WEGHT OF -11 CHEM-MILL DOUBLER AFTER FINAL TIRM (BUT BEFORE RIVET HOLES ARE DRILLED) SHALL NOT EXCEED ...... LBS.

25
20

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
$\sqrt{125}$ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
$\sqrt{200}$ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL $\sqrt{x}$ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓



LDW280-10979-11

CHEM-MIL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHIM-MILLING	* DEPTH OF CUT
1	.034 ±.002	.056
2	.077 ±.002	.013

01

NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
LEM	SIZE D	CODE IDENT NO. 26512	LDW280-10979	
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO 1 REPRODUCTIO

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280
EO NO. 1149
CONTROL INFO NO. LDW280B5861

IN MODEL BLOCK:

FOR DASH NO.'✱' REVISE N/A FOR LM-3(33) AS FOLLOWS:

-✱ N/A IS LDW280H54060 (WAS LDW280H23060)

DWG NO.	DWG TITLE.	DASH NO ✱	NO REQ	E.O. NO
LDW280-10620	WEB ~ A/S CABIN FLOOR	-11	1	B5 ✓
LDW280-10621	WEB ~ A/S CABIN FLOOR	-13	1	B5 ✓
LDW280H10622	CORE ~ A/S CABIN FLOOR	-11, -13 & -15	1EA	C5 ✓
× LDW280H10803	CORE ~ A/S CABIN FLOOR	-27	2	B6 ✓
LDW280-10817	CHANNEL ~ A/S CABIN FLOOR	-11 & -13	2EA	A5 ✓
LDW280-10979	DOUBLER - A/S CABIN FLOOR	-11	1	A6 ✓
LDW280H23232	BEARING ASSY A/S CABIN FLOOR	-1	1	B6
LDW280H23233	BEARING HOUSING ASSY A/S CABIN FLOOR	-1	1	B7
LDW280H23236	HAND GRIP ASSY A/S CABIN FLOOR	-1	2	B8

01
NAS 9-1100

LFM

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD 3501 PKG 1 ECP A087

(5)

REASON FOR EO: REPLACEMENT FLIGHT FLOOR FOR LM-3(33)

DESCRIPTION OF EO: FOR DASH NO ✱ N/A WAS LDW280H23060 FOR LM-3(33)

GAEC EO RELEASE: 10/11

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM269	LM-3(33)	

DRAWING CHANGE REQD: ✓ REVISE DWG ☐ RECORD EO

DISPOSITION OF PARTS: NUT REWORK; REQ SCRAP

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
APPROVED BY	SW.			W.Z.D	CW			
DATE	10/14/68			10/14/68	10/14/68		10/14/68	10-15-68

PRIORITY: C
DRAWING TITLE: NOTED ABOVE
DRAWING NO.: LEO280
EO NO.: 1149

101668
ISSUED BY T.DALY X 84663 10/11/68 SECTION VDI GROUP NO. 335 PL 25

ENG 32.2 REV 3-66

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280
EO NO. 1475
CONTROL INFO NO. LDW230B8049

IN MOD BLOCK
REMOVE LM-15(45) EFF FROM FOLLOWING PARTS:

DWG NO.	DASH NO.	TITLE	NEXT ASSY	QUANT. REQD	CO-MAT	CHANGE EO. Nº
✓ LDW280M10714	-5	HOUSING-BEARING	LDW280H23232	1	M	B4
✓ LDW280M10715	-1	HOUSING-BEARING	LDW280H23233	1	M	A4
✓ LDW280M10716	-1	BEARING	LDW280H54060	1	M	A3
✓ LDW280M10717	-3	PIN	LDW280H54060	1	M	A3
✓ LDW280M10719	-3	TRUSS	LDW280H54060	1	M	B5
✓ LDW280M10722	-1 & -2	CHANNEL	LDW280H23235	1 EA	M	C1
✓ LDW280M10723	-1	FITTING	LDW280H23234	2	M	C1
✓ LDW280M10724	-3	FITTING	LDW280H23234	1	M	C1
✓ LDW280M10825	-1	CHANNEL	LDW280H23273	1	M	C5
✓ LDW280P10966	-13	CHANNEL	LDW280H23334	1	NM	B1
✓ LDW280-10620	-11-1	WEB	LDW230H54060	1	M	B6
✓ LDW280-10621	-17	WEB	LDW280H54060	1	M	B7
✓ LDW280-10788	-11 & -13	WEB	LDW280H23234	1 EA	M	C1
	-15		LDW280H23236			
✓ LDW280-10816	-11	CHANNEL	LDW280H23236	1	M	B3
	-13 & -15			2 EA		
✓ LDW280-10817	-11 & -13	CHANNEL	LDW280H54060	2 EA	M	B1
✓ LDW280-10927	-11 & -19	SKIN	LDW280H23235	2 EA	M	C1
	-13, -15 & -17			1 EA		
✓ LDW280-10955	-11	PLATE	LDW280H23234	1	M	B1
	-13-1		LDW280H54060	1		
✓ LDW280-10979	-11	DOUBLER	LDW280H54060	1	M	B1
LDW280-11036	-15 & -17	BUMPER	LDW280H54060	2 EA	M	B3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD3587 PKG12 CCA1821 AMD#1 (5)

REASON FOR EO: PARTS NOT REQD FOR AAP

DESCRIPTION OF EO: (NOTED ABOVE)

GAEC EO RELEASE: 7-9-69
JK 7/10/69

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15(45)	

DRAWING CHANGE REQD: ✓ REVISE DWG ☐ RECORD EO
DISPOSITION OF PARTS: ☐ REWORK ✓ SCRAP

APPROVED BY					cw			
DATE		7/2/69		7-2-69	7-8-69		7/8/69	7-10-69
	VDI	~~SUPPORT~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: C
DRAWING TITLE: (NOTED ABOVE)
DRAWING NO.: LEO280-
EO NO.: 1475

7-25-69
ISSUED BY P MARTELLO X86068 SECTION VEH DES INT GROUP NO. 335 PL 25

01

NAS 9-1100

PART NO. LDW280-10980-15,-16

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23032	LEM-6(36)	2 EA
LEM	LDW280-23032	LEM-5(35)	2 EA
LEM	LDW280-23032	LEM-4(34)	2 EA
LEM	LDW280-23032	LEM-3(33)	2 EA
LEM	LDW280-23032	LTA-3(13)	2 EA

GAEC SCH NO. 32-5

PART NO. LDW280-10980-11,-12 -13,-14,

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23032	LEM-6(36)	1 EA
LEM	LDW280-23032	LEM-5(35)	1 EA
LEM	LDW280-23032	LEM-4(34)	1 EA
LEM	LDW280-23032	LEM-3(33)	1 EA
LEM	LDW280-23032	LTA-3(13)	1 EA

GAEC SCH NO. 32-5

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00						
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED

LAST DASH NO. USED -16

GRUMMAN REL INFO
PRIM NO. 215 LE(001) MP12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY F.ZUKAS 3-24-66
LAYOUT BY WHISTON
CHECKED BY WCG 3/25/66
GR LEADER 3/30/66
VEH DES INT 3/30
STRUCTURES 3/31
STRUCTURES Hilderman 3/31
WEIGHTS 4-5
RELIABILITY
PROJ ENGR 4-5-66
REL GROUP Both 4-6-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE - MID SECT - X277.138 DECK
+Z22.00

SIZE B
CODE IDENT NO. 26512
LDW280-10980
SCALE NONE
SHEET 1.00 OF 3

9-64

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10980-16	E	CLIP	AL ALY EXTR	QQ-A-277	7075-T6511	DIE 64869 X 4 1/8	NONE	88	
								-15						DIE 64869 X 4 1/8			
								-14						DIE 64869 X 4 1/4			
								-13		CLIP				DIE 64869 X 4 1/4	NONE		
								-12		ANGLE				DIE 64869 X 6 7/8	NOTE 3		
								LDW280-10980-11	E	ANGLE	AL ALY EXTR	QQ-A-277	7075-T6511	DIE 64869 X 6 7/8	NOTE 3	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP 14-9030
						CM	CHEM-MILL	LSP 14-26100

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10980

SCALE NONE

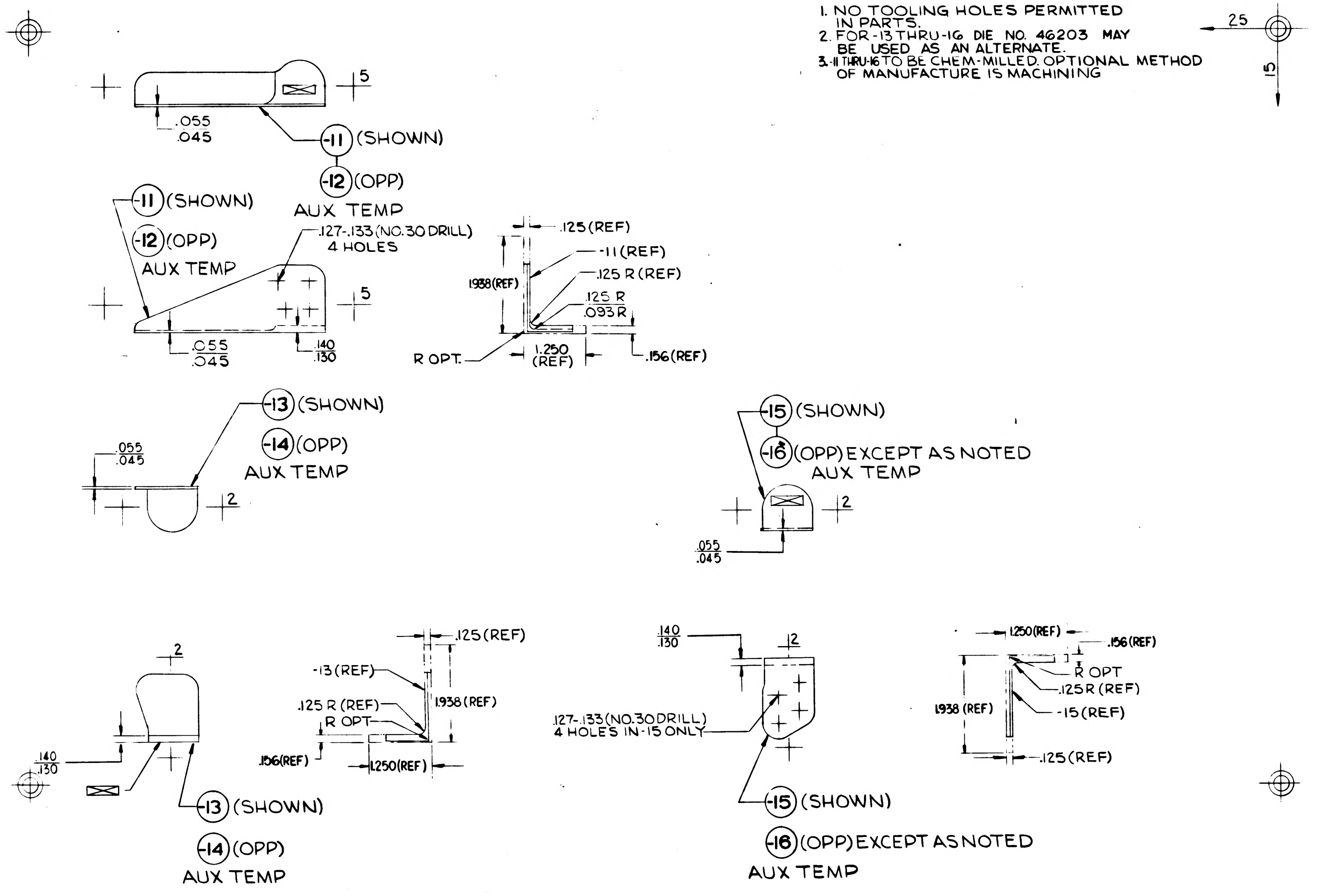
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. FOR -13 THRU -16 DIE NO. 46203 MAY BE USED AS AN ALTERNATE.
3. -11 THRU -16 TO BE CHEM-MILLED. OPTIONAL METHOD OF MANUFACTURE IS MACHINING



25
15
5
.055
.045
-11 (SHOWN)
-12 (OPP)
AUX TEMP
-11 (SHOWN)
-12 (OPP)
AUX TEMP
.127-.133 (NO.30 DRILL)
4 HOLES
5
.055
.045
.140
.130
.125 (REF)
-11 (REF)
.125 R (REF)
1.938 (REF)
.125 R
.093 R
R OPT.
1.250
(REF)
.156 (REF)
-13 (SHOWN)
-14 (OPP)
AUX TEMP
.055
.045
2
-15 (SHOWN)
-16 (OPP) EXCEPT AS NOTED
AUX TEMP
2
.055
.045
2
.140
.130
-13 (SHOWN)
-14 (OPP)
AUX TEMP
.125 (REF)
-13 (REF)
1.938 (REF)
.125 R (REF)
R OPT
.156 (REF)
1.250 (REF)
.140
.130
12
.127-.133 (NO.30 DRILL)
4 HOLES IN -15 ONLY
-15 (SHOWN)
-16 (OPP) EXCEPT AS NOTED
AUX TEMP
1.250 (REF)
.156 (REF)
R OPT
.125 R (REF)
-15 (REF)
1.938 (REF)
.125 (REF)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
$\sqrt{125}$ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
$\sqrt{200}$ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

LEM	SIZE D	CODE IDENT NO. 26512	LDW280-10980
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

FOR PHOTO REPRODUCTION

23

ENG 22.2 REV 2-65

*

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280		EO NO. 295
CONTROL INFO NO. LDW280CA0657		

*

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9 (39), LEM-10(40), LEM-11(41), LEM-12 (42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4 (34)

	DRAWING NUMBER	CHANGE NUMBER	TITLE
✓	LDW280-10789	A3	SEE DRAWING
✓	-10790	B1	
✓	H 10792	C1	
✓	-10796	A1	
✓	-10798	B1	
✓	-10800	B2	
✓	H 10801	A1	
✓	H 10802	B1	
✓	H 10804	B1	
✓	-10806	C1	
✓	-10808	A1	
✓	P 10809	B2	
✓	-10811	B2	
✓	-10813	B1	
✓	-10814	B1	
✓	-10815	A4	
✓	-10817	A1	
✓	-10838	B1	
✓	-10846	C1	
✓	-10927	B1	
✓	-10934	A1	
✓	-10953	B1	
✓	-10954	A1	
✓	-10955	A1	
✓	-10961	A3	
✓	P 10966	A4	
✓	-10970	A1	
✓	-10973	A1	
✓	-10974	A1	
✓	-10976	A1	
✓	-10977	A1	
✓	-10979	A1	
✓	LDW280-10980	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF. *

GAEC EO RELEASE: C LE 10-8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38) LEM-9(39)	
LEM		LEM-10(40) LEM-11(41) LEM-12(42)	
LEM		LEM-13(43) LEM-14(44) LEM-15(45)	

DRAWING CHANGE REQD: ✓ REVISE DWG ☐ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

APPROVED BY								
				—	AW			ac
DATE	9/23/66			—	9.21		10-6-66	10-3-66
	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO: LE0280

EO NO: 295

ISSUED BY L. DE TURRIS 7-18-66 X 1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 35

01

NAS 9-1100

				LEM	LDW280-23032	LEM-6(36)	2 EA	LEM	LDW280-23032	LEM-6(36)	1 EA
				LEM	LDW280-23032	LEM-5(35)	2 EA	LEM	LDW280-23032	LEM-5(35)	1 EA
				LEM	LDW280-23032	LEM-4(34)	2 EA	LEM	LDW280-23032	LEM-4(34)	1 EA
				LEM	LDW280-23032	LEM-3(33)	2 EA	LEM	LDW280-23032	LEM-3(33)	1 EA
				LEM	LDW280-23032	LTA-3(13)	2 EA	LEM	LDW280-23032	LTA-3(13)	1 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.	
				LDW280-10981-15&-16		32-5		LDW280-10981-11,-12,-13&-14		32-5	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	—	GRUMMAN REL INFO	
		PRIM NO.	K(001)
LAST DASH NO. USED	-16	215	MP12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
± 1/32 ±.020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	M.H.MULLER 3/23/66	RELIABILITY	
LAYOUT BY	G.WHISTON		
CHECKED BY	M 3·25·66		
GR LEADER	Whitley 3/28/66		
VEH DES INT			
STRUCTURES	FCB GW 3/31	PROJ ENGR	4-5-66
STRUCTURES	Alderman 3/31	REL GROUP	4-6-66
WEIGHTS	4.5		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP
ASCENT STAGE-MID SECTION
X277.138 DECK-Z22.0

SIZE B
CODE IDENT NO. 26512
LDW280-10981
SCALE NONE
SHEET 1.00 OF 3

ENG 77.1 9-64

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10981-16	E	CLIP	AL ALY EXTR	QQ-A-277	7075-T6511	DIE#64869 x 4	CM	88	
		-15	↕	↕	↕	↕	↕	DIE#64869 x 4	↕	↕	
		-14	↕	↕	↕	↕	↕	DIE#102853 x 4 1/4	↕	↕	
		-13	↕	↕	↕	↕	↕	DIE#102853 x 4 1/4	↕	↕	
		-12	↕	↕	↕	↕	↕	DIE#46203 x 7	↕	↕	
		LDW280-10981 -11	E	CLIP	AL ALY EXTR	QQ-A-277	7075-T6511	DIE#46203 x 7	CM	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030						
CM	CHEM MILL	LSP14-26100						

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-10981

SCALE NONE

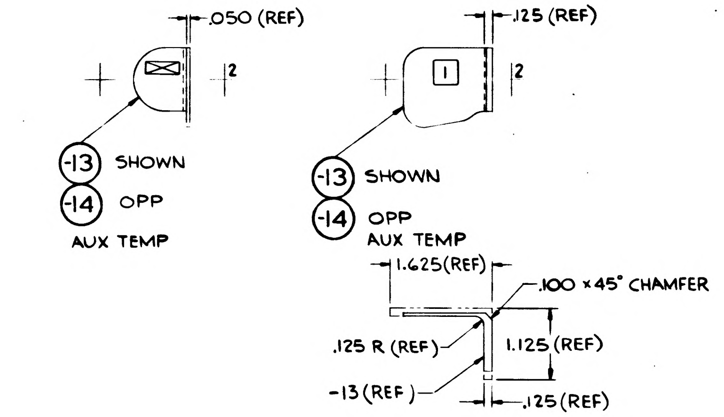
SHEET 2.00

ENG 77.2 7-65

01

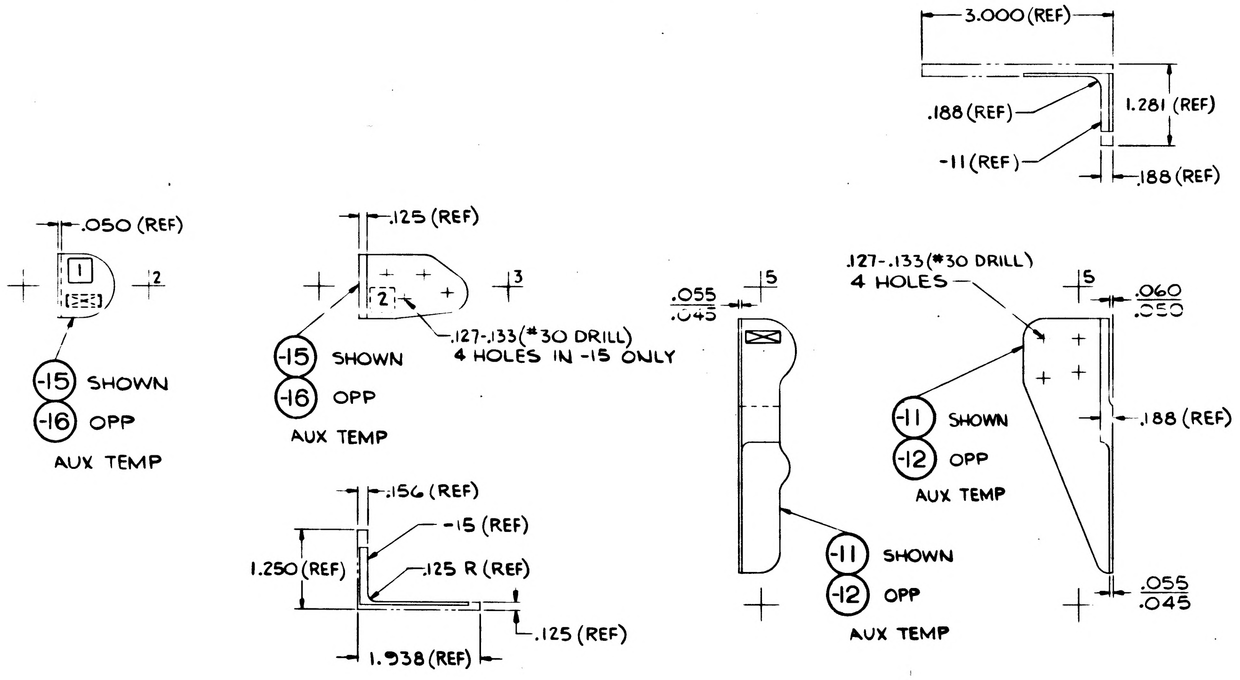
NAS 9-1100

LDW280-10981



.050 (REF)
2
-13 SHOWN
-14 OPP
AUX TEMP
.125 (REF)
1
2
-13 SHOWN
-14 OPP
AUX TEMP
1.625(REF)
.100 × 45° CHAMFER
.125 R (REF)
1.125 (REF)
-13 (REF)
.125 (REF)

NOTES:
1. FOR -13,-14,-15 & -16 OPTIONAL METHOD OF MANUFACTURING IS MACHINING.
2. -11 & -12 TO BE CHEM MILLED. OPTIONAL METHOD OF MANUFACTURING IS MACHINING.
3. NO TOOLING HOLES PERMITTED IN PARTS.



3.000 (REF)
.188 (REF)
1.281 (REF)
-11 (REF)
.188 (REF)
.050 (REF)
1
2
-15 SHOWN
-16 OPP
AUX TEMP
.125 (REF)
2
3
.127-.133 (#30 DRILL)
4 HOLES IN -15 ONLY
-15 SHOWN
-16 OPP
AUX TEMP
.156 (REF)
-15 (REF)
1.250 (REF)
.125 R (REF)
.125 (REF)
1.938 (REF)
.055
.045
5
-11 SHOWN
-12 OPP
AUX TEMP
.127-.133 (#30 DRILL)
4 HOLES
5
.060
.050
.188 (REF)
-11 SHOWN
-12 OPP
AUX TEMP
.055
.045

LDW280-10981-13 & -14

CHEM MILL LINE TOLERANCE
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
1	.050±.005	.075 (REF)

LDW280-10981-15 & -16

CHEM MILL LINE TOLERANCE
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
1	.125±.005	.031 (REF)
2	.050±.005	.075 (REF)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LEM	D	26512	LDW280-10981
SCALE FULL			SHEET 3.00

FOR PHOTO REPRODUCTION

LDW280-10981

01

24 *

GRM 33.2 REV 2-60

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280
EO NO. 296
CONTROL INFO NO. LDW280 A 0658

*

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10981	A1	SEE DRAWING
-11015	B1	
-11025	B1	
-11028	B4	
-11035	A2	
-11036	B1	
-11039	A1	
-11045	A1	
-11048	B1	
-11050	C1	
P11055	B2	
P11056	C2	
-11067	B1	
-11068	B1	
H11069	B1	
-11070	C1	
-11071	A1	
-11072	A1	
-11073	A2	
P11087	B1	
-11103	A1	
-11116	A1	
-11119	B1	
-11123	A2	
-11128	C1	
-11149	A1	
-11153	A1	
-11154	A2	
-11155	A1	
-11156	B1	
-11157	B2	
LDW280-11160	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC C EO RELEASE: 10-8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM-9(39)
LEM		LEM-10(40) LEM-11(41)	LEM-12(42)
LEM		LEM-13(43) LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D REWORK SCRAP

APPROVED BY: DP
DATE: 9/23/66
V.D.I. — SUPPORT — RELIAB. GROUP — GROUP LEADER — STRESS GROUP 9.29 — LIAISON ENGRG — PROJ ENGRG RMS 10-6-66 — 10-3-66

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LE0280
EO NO.: 296

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 35

01 NAS 9-1100

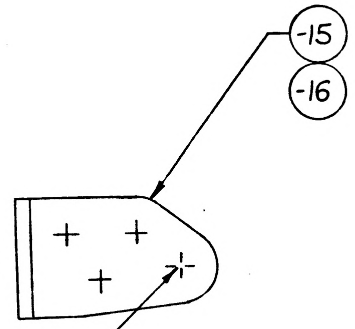
ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW280-10981		EO NO. A2	
CONTROL INFO NO.	LM-3- 6081		



REMOVE 1 (#30 HOLE) IN -15 [illegible]
(PLUG WITH NAS1097AD FLUSH
BOTH SIDES.)

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐

REASON FOR EO: CONFLICTING HOLE PATTERN IN ADJOINING PART

DESCRIPTION OF EO: ON -15 & -16 REMOVED 1 (#30 HOLE) 3 HOLES WAS 4

GAEC EO RELEASE: (3) ® JK

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM-8 (38)	
		THRU	
		LM-15 (45	

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
✓		✓	

APPROVED BY				—	BN			
DATE	3/16/68			—	3-5-68	3-6-68	3/16/68	3/17/68
3-5-68	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	CLIP ASCENT STAGE- MID SECTION X 277.138 DECK - Z 22.0	LDW 280-10981	A2

ISSUED BY LIAISON 3/M. DUSANIWSKYJ (EX 2151) SECTION VDI GROUP NO. 280 PL 25

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NOCHG -LAST REV NOCHG C.D'AVELLA 9-26-66 ADDED SH.1.10,2.00&3.00						
A	1	1,1.10,2.&3.						E.O. A1	Ⓑ FROM F/D& B/M REMOVED LDW280-10982-1&-15 WCG	LTA-8,LM-1&2		✓	D'AVELLA 9-26-66		

CHG APPROVED					
LTR	GROUP LDR	V.D.I.	STRUCT.	STRUCT.	WEIGHTS
A					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10982	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY -5	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
5		GR500A-4C	E	RIVET		STD. PART					
1		LDW280-10982-21	E	NUT GANG CHANNEL	NAS 688 P-6			LGTH=10 7/16	NONE	NONE	
1		LDW280-10982-19	E	ZEE	AL.ALLOY	QQ-A-250/4	2024	.040X2½X11	T3/T42	88	
		LDW280-10982-11	E	ZEE	AL.ALLOY	QQ-A-250/4	2024-T3	.040X1¾X2⅛	NONE	88	
		LDW280-10982-5	E	SUPPORT ASSY							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T3/T42	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

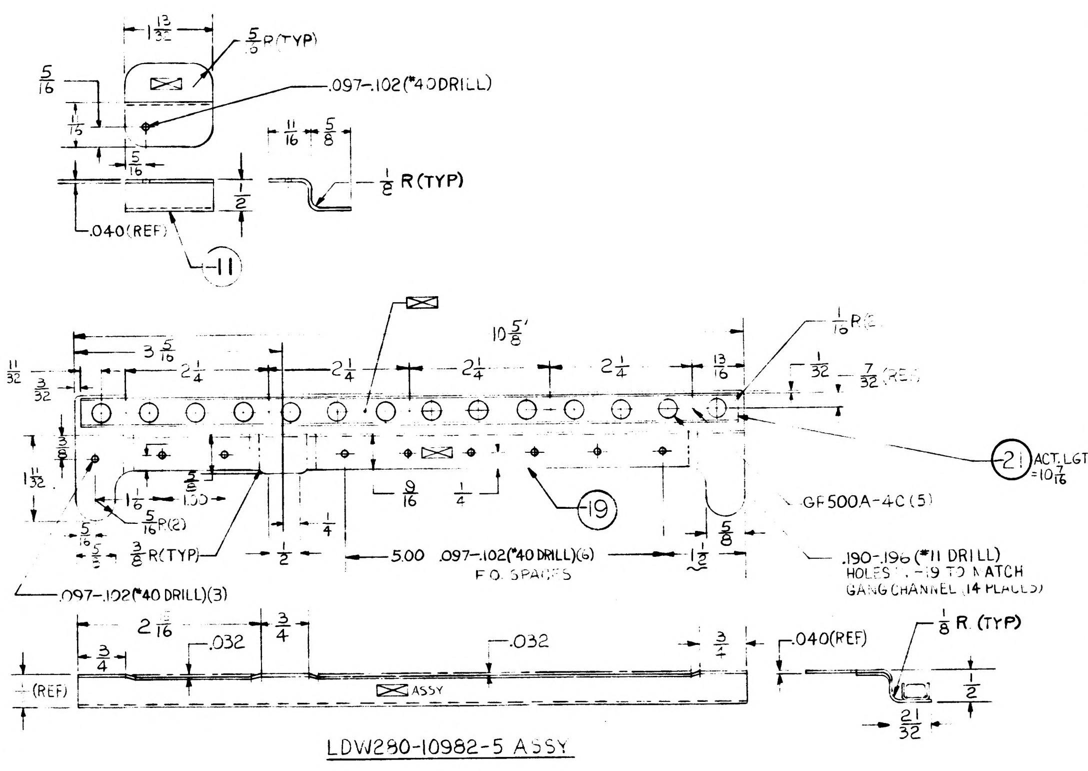
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10982	A
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



$1\frac{13}{32}$
$\frac{5}{16}$R(TYP)
$\frac{5}{16}$
.097-.102(#40DRILL)
$\frac{11}{16}$
$\frac{5}{8}$
$\frac{1}{8}$ R(TYP)
$\frac{1}{2}$
.040(REF)
-11
$10\frac{5}{8}$
$3\frac{5}{16}$
$2\frac{1}{4}$
$\frac{13}{16}$
$\frac{1}{16}$R(2)
$\frac{1}{32}$
$\frac{7}{32}$(REF)
$\frac{11}{32}$
$\frac{3}{32}$
$\frac{3}{8}$
$1\frac{11}{32}$
$1\frac{1}{16}$
1.00
$\frac{5}{16}$R(2)
$\frac{9}{16}$
$\frac{1}{4}$
-19
-21
ACT. LGTH. $=10\frac{7}{16}$
GF500A-4C(5)
$\frac{3}{8}$R(TYP)
5.00 .097-.102(#40 DRILL)(6) E.Q. SPACES
$1\frac{1}{2}$
.190-.196 (#11 DRILL) HOLES IN -19 TO MATCH GANG CHANNEL (14 PLACES)
.097-.102(#40 DRILL)(3)
.032
$\frac{3}{4}$
.040(REF)
$\frac{1}{8}$ R. (TYP)
$\frac{21}{32}$
(REF)
ASSY

LDW280-10982-5 ASSY

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER ~~AND ALL OTHER MARKINGS IN REGION MARKED~~ ☒ ~~USE BOTH SIDES IF NECESSARY.~~ ✓

FILLET AND INSIDE CORNER RADII TOLERANCES
.016R TO .062R ± .010
.063R TO .250R ± .015
OVER .250R ± .030

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.

MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES

125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10

200 √ FOR ALL DRILLED HOLES

REMOVE ALL BURRS. BREAK ALL EDGES .015-.031

INSPECTION INFORMATION MINIMUM PERMISSIBLE ~~AVERAGE~~ EDGE DISTANCE MARKED IS 1/2 FASTENER DIA FROM FASTENER ℄ ✓

SYMBOL √ DENOTES SURFACE TO BE MACHINED

UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.

TOLERANCE ON LOFTED DELINEATIONS IS

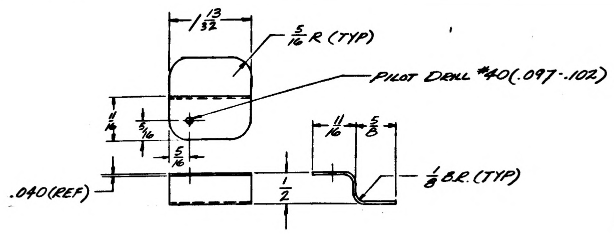
	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LM	SIZE C	CODE IDENT NO. 26512	LDW280-10982 A
MODEL OR END ITEM	SCALE		SHEET 5.00

LDW280-10982 A

01 NAS 9-1100

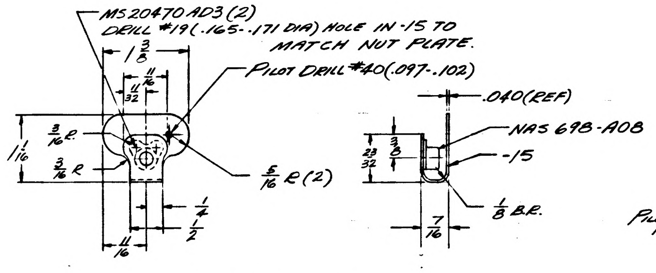
REVISIONS														
REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION					DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MODULE NUMBER	DISPOSITION OF EXIST PARTS		ENGRG APPD	GOVT APPD
			GRUMMAN INFO ONLY / DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER				RE-WORK	SCRAP		

MANUFACTURING OPERATIONS	
NOTES CHECKED ✓ APPLY TO THIS DWG.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.	
250 FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
RUBBER STAMP PART NUMBER ~~AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
INSPECTION INFORMATION MINIMUM PERMISSIBLE ~~AVERAGE~~ EDGE DISTANCE MARKED IS 1 1/2 FASTENER DIA	✓
SYMBOL ʃ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓



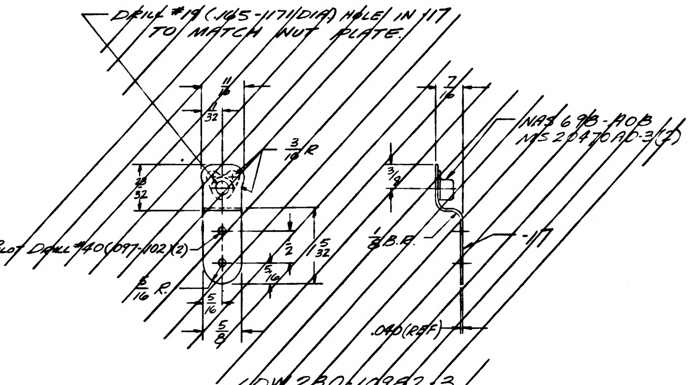
1 13/32
5/16 R (TYP)
PILOT DRILL #40 (.097-.102)
11/16
5/16
5/16
.040 (REF)
1/2
11/16
5/8
1/8 B.R. (TYP)

LDW280-10982-11



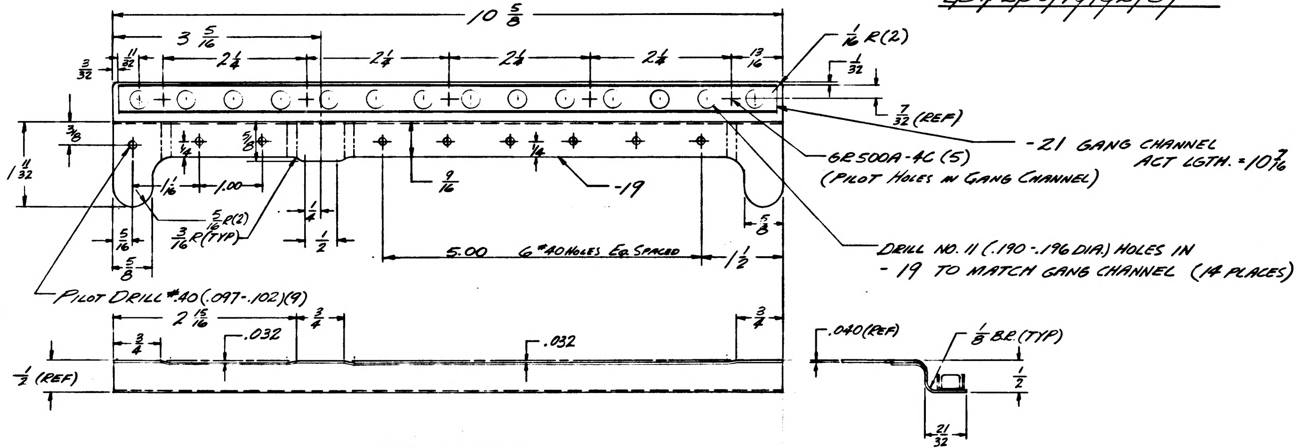
MS20470AD3 (2)
DRILL #19 (.165-.171 DIA) HOLE IN -15 TO MATCH NUT PLATE.
1 3/8
11/32
PILOT DRILL #40 (.097-.102)
.040 (REF)
NAS 698-A08
-15
3/8 R
1 1/16
3/16 R
5/16 R (2)
23/32
3/8
1/4
1/2
11/16
7/16
1/8 B.R.

LDW280-10982-1



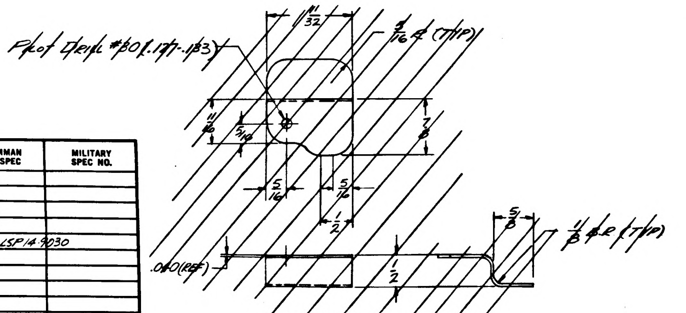
DRILL #19 (.165-.171 DIA) HOLE IN -17 TO MATCH NUT PLATE.
11/16
11/32
3/16 R
23/32
PILOT DRILL #40 (.097-.102)(2)
1/2
1 5/32
5/16
5/16 R
5/16
5/8
7/16
NAS 698-A08
MS20470AD-3 (2)
3/8
1/8 B.R.
-17
.040 (REF)

LDW280-10982-3



10 5/8
3 5/16
3/32
11/32
2 1/4
2 1/4
2 1/4
2 1/4
13/16
1/16 R (2)
1/32
7/32 (REF)
-21 GANG CHANNEL ACT LGTH. = 10 7/16
GR500A-4C (5) (PILOT HOLES IN GANG CHANNEL)
3/8
1 11/32
1/4
5/8
1.00
1 1/16
5/16 R (2)
3/16 R (TYP)
9/16
-19
1/4
1/4
1/2
5/16
5/8
5.00 6 #40 HOLES EQ. SPACED
1 1/2
5/8
DRILL NO. 11 (.190-.196 DIA) HOLES IN -19 TO MATCH GANG CHANNEL (14 PLACES)
PILOT DRILL #40 (.097-.102)(9)
2 15/16
3/4
.032
3/4
.032
3/4
1/2 (REF)
.040 (REF)
1/8 B.R. (TYP)
1/2
21/32

LDW280-10982-5



Pilot Drill #30 (.171-.183)
11/32
5/16 R (TYP)
11/16
5/16
5/16
5/16
1/2
.040 (REF)
1/2
5/8
1/8 B.R. (TYP)

LDW280-10982-13

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	~~G. S. S.~~ LSP14-9030	

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
T3/42	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

ENG. 883
5-63

-5	-1	PART OR IDENTIFYING NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE
5		GR500A-4C	E		RIVET		STD. PART						
	2	MS20470AD3			RIVET		STD. PART						
	1	NAS698-A08			NUT PLATE		STD. PART				NONE		
1		LDW280-10982-21			GANG CHANNEL	NAS688P-6	STD. PART		LGTH = 10 7/16		NONE		
1		-19			ZEE	AL ALLOY	QQ-A-355	2024	.040 × 3 × 11 1/4	T3/42	88		
		~~-17~~			~~ZEE~~			~~2024-T3~~	~~.040 × 1 1/4 × 2 3/4~~	~~NONE~~	~~88~~		
	1	-15			CLIP			2024-T3	.040 × 2 × 2 5/8	NONE	88		
		~~-13~~			~~ZEE~~			~~2024-T3~~	~~.040 × 2 1/4 × 2 1/2~~	~~NONE~~	~~88~~		
		-11			ZEE	AL. ALLOY	QQ-A-355	2024-T3	.040 × 2 × 2 1/2	NONE	88		
		-5			SUPPORT ASSY								
		~~-3~~			~~SUPPORT ASSY~~								
		LDW280-10982-1	E		SUPPORT ASSY								
QTY REQ'D PER ASSY													

TO BE REDRAWN ON PRODUCTION FORMAT OBSOLETE REDRAWN 3

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
LEM	LDW280-28051	LTA8(8) LEM1(31) LEM2(32)	8
PART NO. LDW280-10982-11			
LEM	LDW280-28051	LTA8(8) LEM1(31) LEM2(32)	1
PART NO. LDW280-10982-5		GRUMMAN SCH INFO 31-3	

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
~~LEM~~	~~LDW280-28051~~	~~LTA8(8) LEM1(32) LEM2(32)~~	
~~PART NO. LDW280-10982-3~~			
LEM	LDW280-28051	LTA8(8) LEM1(31) LEM2(32)	20
PART NO. LDW280-10982-1		GRUMMAN SCH INFO 31-3	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
± 1/32 ± .020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE
GRUMMAN REL INFO
PRIM. NO. 4(01) 215 MP12 ES 4-6

DRAWN BY		
CHECKED BY		
LAYOUT BY	E. STANL	3/19/66
GRP. LDR.	Puatu	
V.O.I.		
STRUCT		4/2
STRUCT	Hillerman	4/2
WEIGHTS		
PROJECT		
Release		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

SUPPORT ASSEMBLY
ASCENT STAGE - CABIN - EQUIP LINES

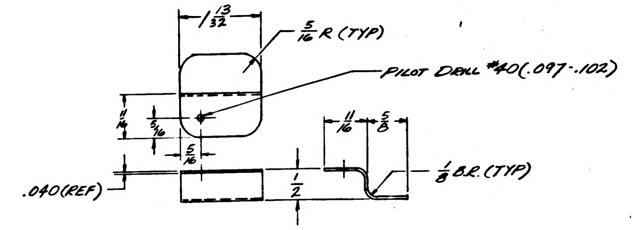
CONTRACT NO. NAS 9-1100 DOCUMENTATION TYPE II
CODE IDENT NO. 26512 SIZE F LDW280-10982
SCALE LINE ITEM #1 SHEET

SUPERSEDED BY 1LDW280-10982 REV.A 9-26-66

LDW280-10982

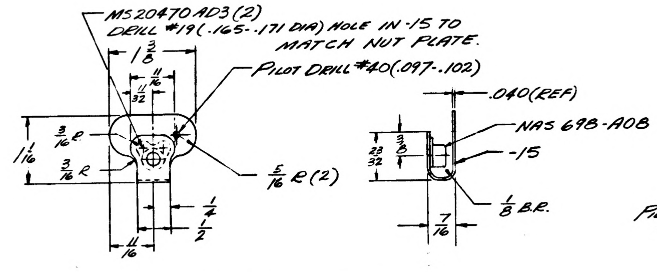
NAS 9-1100

MANUFACTURING OPERATIONS	
NOTES CHECKED ✓ APPLY TO THIS DWG.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.	
250√ FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
RUBBER STAMP PART NUMBER ~~AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
INSPECTION INFORMATION MINIMUM PERMISSIBLE ~~AVERAGE~~ EDGE DISTANCE MARKED IS 1½ FASTENER DIA	✓
SYMBOL ∱ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓



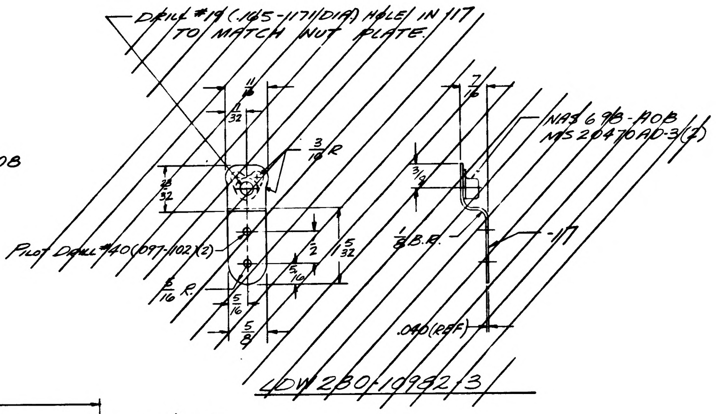
1 13/32
5/16 R (TYP)
PILOT DRILL #40 (.097-.102)
11/16
5/16
5/16
11/16
5/8
.040 (REF)
1/2
1/8 B.R. (TYP)

LDW280-10982-11

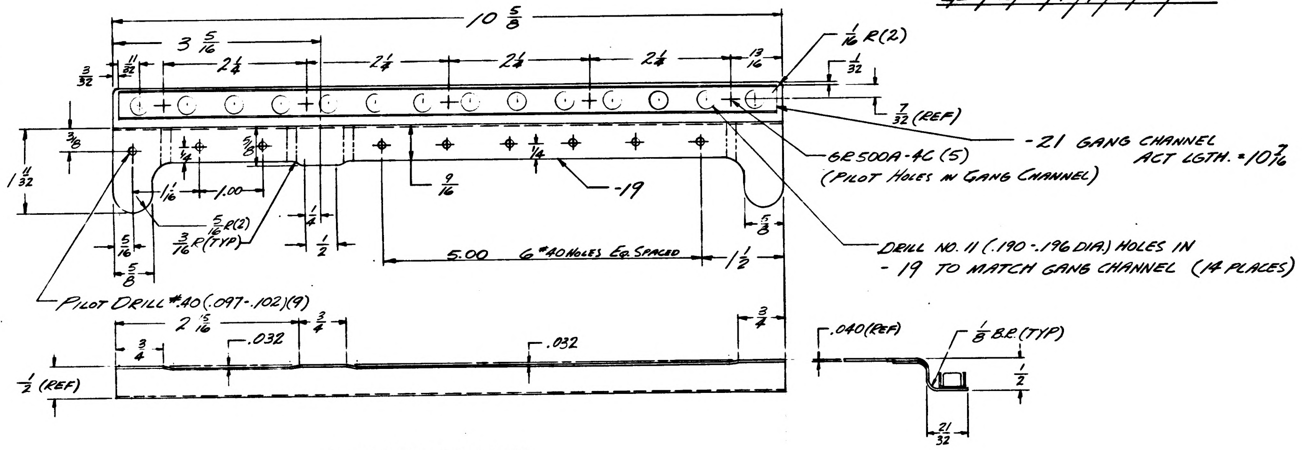


MS20470AD3 (2)
DRILL #19 (.165-.171 DIA) HOLE IN -15 TO MATCH NUT PLATE.
PILOT DRILL #40 (.097-.102)
.040 (REF)
NAS 698-A08
-15
1/8 B.R.
5/16 R (2)
1 3/8
1/16 R
3/8 R
7/16

LDW280-10982-1

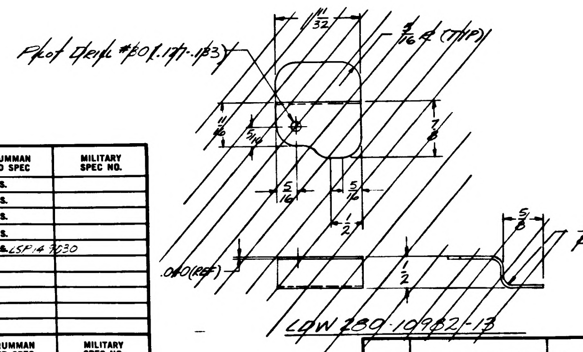


DRILL #19 (.165-.171 DIA) HOLE IN -17 TO MATCH NUT PLATE.
NAS 698-A08
MS20470AD-3 (2)
PILOT DRILL #40 (.097-.102) (2)
3/8 R
1/8 B.R.
-17
.040 (REF)
LDW280-10982-3



10 5/8
3 5/16
2 1/4
2 1/4
2 1/4
2 1/4
1/16 R (2)
7/32 (REF)
-21 GANG CHANNEL ACT LGTH. = 10 7/16
GR500A-4C (5) (PILOT HOLES IN GANG CHANNEL)
11/32
1.00
3/16 R (TYP)
9/16
1/4
-19
5.00
6 #40 HOLES EQ. SPACED
1 1/2
DRILL NO. 11 (.190-.196 DIA) HOLES IN -19 TO MATCH GANG CHANNEL (14 PLACES)
PILOT DRILL #40 (.097-.102) (9)
2 9/16
3/4
.032
.032
3/4
1/2 (REF)
.040 (REF)
1/8 B.R. (TYP)
1/2
21/32

LDW280-10982-5



PILOT DRILL #30 (.171-.183)
5/16 R (TYP)
11/16
5/16
7/8
5/16
5/16
1/2
.040 (REF)
1/2
1/8 B.R. (TYP)
LDW 280-10982-13

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	~~G. S. S.~~ LSP 14-9030	

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
T3/T42	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

ENG. 003 5-63

REVISIONS													
REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION					DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MODULE NUMBER	DISPOSITION OF EXIST PARTS		ENGRG APPD	GOVT APPD
			GRUMMAN INFO ONLY DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER				RE-WORK	SCRAP		

QTY REQ'D PER ASSY -5		-1	PART OR IDENTIFYING NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE
5			GR500A-4C	E		RIVET		STD. PART						
		2	MS20470AD3			RIVET		STD. PART						
		1	NAS698-A08			NUT PLATE		STD. PART				NONE		
1			LDW280-10982-21			GANG CHANNEL	NAS688P-6	STD. PART		LGTH = 10 7/16		NONE		
1			-19			ZEE	AL ALLOY	QQ-A-355	2024	.040 × 3 × 11 1/4	T3/42	88		
			~~-17~~			~~ZEE~~			~~2024-T3~~	~~.040 × 1/4 × 2 3/4~~	~~NONE~~	~~88~~		
		1	-15			CLIP			2024-T3	.040 × 2 × 2 5/8	NONE	88		
			~~-13~~			~~ZEE~~			~~2024-T3~~	~~.040 × 2 1/4 × 2 1/2~~	~~NONE~~	~~88~~		
			-11			ZEE	AL. ALLOY	QQ-A-355	2024-T3	.040 × 2 × 2 1/2	NONE	88		
			-5			SUPPORT ASSY								
			~~-3~~			~~SUPPORT ASSY~~								
			LDW280-10982-1	E		SUPPORT ASSY								

TO BE REDRAWN ON PRODUCTION FORMAT OBSOLETE REDRAWN

LEM	LDW280-28051	LTA8(18)LEM1(31)LEM2(32)	8	~~LEM~~	~~LDW280-28051~~	~~LTA8(18)LEM1(31)LEM2(32)~~		
MODEL	NEXT ASSY	MODULE NO	REQD PER MODULE	~~MODEL~~	~~NEXT ASSY~~	~~MODULE NO~~	REQD PER MODULE	
PART NO. LDW280-10982-11				~~PART NO. LDW280-10982-3~~				
LEM	LDW280-28051	LTA8(18)LEM1(31)LEM2(32)	1	LEM	LDW280-28051	LTA8(18)LEM1(31)LEM2(32)	20	
MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE	MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE	
PART NO. LDW280-10982-5		GRUMMAN SCH INFO 31-3		PART NO. LDW280-10982-1		GRUMMAN SCH INFO 31-3		

REQ'D PER MODULE	MODEL	NEXT ASSY	MODULE NO.
PART NO.			GRUMMAN SCH INFO

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ± 1/32 ± .020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

GRUMMAN REL INFO

PRIM. NO. 18(101) 2/15 MP12 ES 4-6

DRAWN BY		
CHECKED BY		
LAYOUT BY	E. STAHL	3/19/66
GRP LDR		
V.U.I.		
STRUCT		
STRUCT		
WEIGHTS		
PROJECT		
RELEASE		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

SUPPORT ASSEMBLY
ASCENT STAGE - CABIN - EQUIP LINES

CONTRACT NO. NAS 9-1100 DOCUMENTATION TYPE II

CODE IDENT NO. 26512 SIZE F LDW280-10982

SCALE LINE ITEM # 1 SHEET

SUPERSEDED BY 1LDW280-10982 REV.A 9-26-66

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10982
EO NO. B1
CONTROL INFO NO. LM5-9279

ON-11
INCREASE 8REQ'D/MOD TO 10 REQ'D/MOD

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: PROVIDE EQUIP LINES SUPPORT (ELECT)

DESCRIPTION OF EO: ON-11 10 REQ'D/MOD WAS 8 REQ'D/MOD

GAEC EO RELEASE: FR

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LTA-8(18)	
LM		LM-1(31)	
LM		LM-2(32)	

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
✓		✓	

APPROVED BY	WT				JB	CH	RMC(W)	
DATE	10/8/66				10-10-66	10-12-66	10-12	10-12-66
10/8/66	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SUPPORT ASSEMBLY ASCENT STAGE - CABIN - EQUIP. LINES	LDW280-10982	B1

ISSUED BY K. BEACH/W. TRAUT X6455 SECTION VDI GROUP NO. 335 PL 5

01

NAS 9-1100

LDW280-10983 B

LEM	LDW280-28099	LM-1(31)	4
LEM	LDW280-28099	LTA-8(18)	4

PART NO. LDW280-10983-23

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LTM280-25106	TM-2 A/R(60)	1
	LDW280-54099	LEM-15(45)	1
		LEM-14(44)	1
		LEM-13(43)	1
		LEM-12(42)	1
		LEM-11(41)	1
		LEM-10(40)	1
		LEM-9(39)	1
		LEM-8(38)	1
		LEM-7(37)	1
		LEM-6(36)	1
		LEM-5(35)	1
	LDW280-54099	LEM-4(34)	1
	LDW280-23099	LTA-3(13)	1
	LDW280-23099	LEM-3(33)	1
	LDW280-28099	LEM-2(32)	1
	LDW280-28099	LEM-1(31)	1
LEM	LDW280-28099	LTA-8(18)	1
PART NO. LDW280-10983-5		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28099	LEM-2(32)	1
LEM	LDW280-28099	LEM-1(31)	1
LEM	LDW280-28099	LTA-8(18)	1
PART NO. LDW 280-10983-7		GAEC SCH NO. 31-1	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-10406	LEM-2(32)	2
LEM	LDW280-10406	LEM-1(31)	2
LEM	LDW280-10406	LTA-8(18)	2
PART NO. LDW280-10983-1		GAEC SCH NO. 3H	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL^C INFO B	
		PRIM NO.	(2001)
LAST DASH NO. USED	-23	215	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.010 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 LINE ITEM #1 DOCUMENTATION TYPE II

DRAWN BY	ROCKLEIN 3/19/66	RELIABILITY	
LAYOUT BY	ROCKLEIN 3/19/66		
CHECKED BY			
GROUP LDR	PHILLIPS 3/20/66		
VEH.DES.INT.	BISCHOFF 3/21/66		
STRUCT.	FEB BW 3/24/66	PROJ ENGR	J.ALBER RMC 3/28/66
STRUCT.	HILDERMAN 3/24/66	REL GROUP	A.CARAMANICA 3/30/66
WEIGHTS	ROBESCH DJL 3/25/66		

R GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP ASSEMBLY
ASCENT STAGE MID SECTION
CABIN FAN HEAT EXCHANGER

SIZE B CODE IDENT NO. 26512 LDW280-10983 B

SCALE NONE SHEET 1.00 OF 4

THIS DWG SUPERSEDES LDW280-10983 NO CHANGE 3/19/66

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE LAST REVISION NO CHANGE. SH. 1 OF 4 WAS 1 OF 1. LOFTED DWG WAS DIMENSIONED. D.J.				JAEGGI 5-13-66	5-16-66	6-6-66
A	1	1.00, 1.10, 2.00, 3.00						EO A1	CREATED -15 & -5 ASSY TO REPLACE -13 & -3 ASSY.	LTA-8, LEM-1, 2		-3	JAEGGI		
	2							EO A2 Ⓡ	CREATED -17 AND -7 ASSY.		NOT	REQD	5-13-66		
B	1	1.00 1.10						EO B1	ADDED EFFECTIVITY OF -5 TO INCLUDE LTA-3(13), LEM-3(33) THRU LEM-6(36)	LTA-3, LEM-3 THRU LEM-6	NOT	REQD	B. REYES 10-18-68		BC 10-21-68
	2	1.00						LEO280-191	FOR -5: ADDED TM-2 A/R EFFECTIVITY (N/A LTM280-25106) ADDED LEM-7 THRU LEM-15, EFFECTIVITY (N/A LDW280-54099).	TM-2, LEM-7 THRU LEM-15					
	3	1.00, 2.00, 3.30	3D				✓	EOB3	ADDED -23	LTA-8, LM-1, LM-2					
	4	1.00				✓		EOB4, LCD1436 CCA578	REMOVED -23	LM-2		✓			
	5			G, LFM96		✓		LEO280-860 LCD2508, CCA858	CANCELLED BY LEO280-897	LTA-8		✓			
	6			G, LFM196		✓		LEO280-897 LCD2508, CCA858	CANCELS CHANGES ON LEO860		NOT	REQD			

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10983	B Ⓑ
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

0 1

NAS 9-1100

				-7	-5	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								NAS1097AD3	E	RIVET	STD PART						
						1		NAS698A08	E	NUT, PLATE	STD PART						
					2			NAS696A08	E	NUT, PLATE	STD PART						
				2				NAS697A08	E	NUT, PLATE	STD PART						
								MS20426AD3	E	RIVET	STD PART						
				1				LDW280-10983-17	E	CLIP	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 x 2 x 2 1/2	NONE	88	
					1			LDW280-10983-15	E	CLIP	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 x 3 3/4 x 4 3/4	NONE	88	
						1		LDW280-10983-11	E	CLIP	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 x 1 3/8 x 2 1/2	NONE	88	
								LDW280-10983-23	E	CLIP	AL ALLOY SH	QQ-A-250/5	2024-T3	.032 x 2 x 2	NONE	88	
								LDW280-10983-7	E								
								LDW280-10983-5	E								
								LDW280-10983-1	E								

QTY PER ASSEMBLY

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

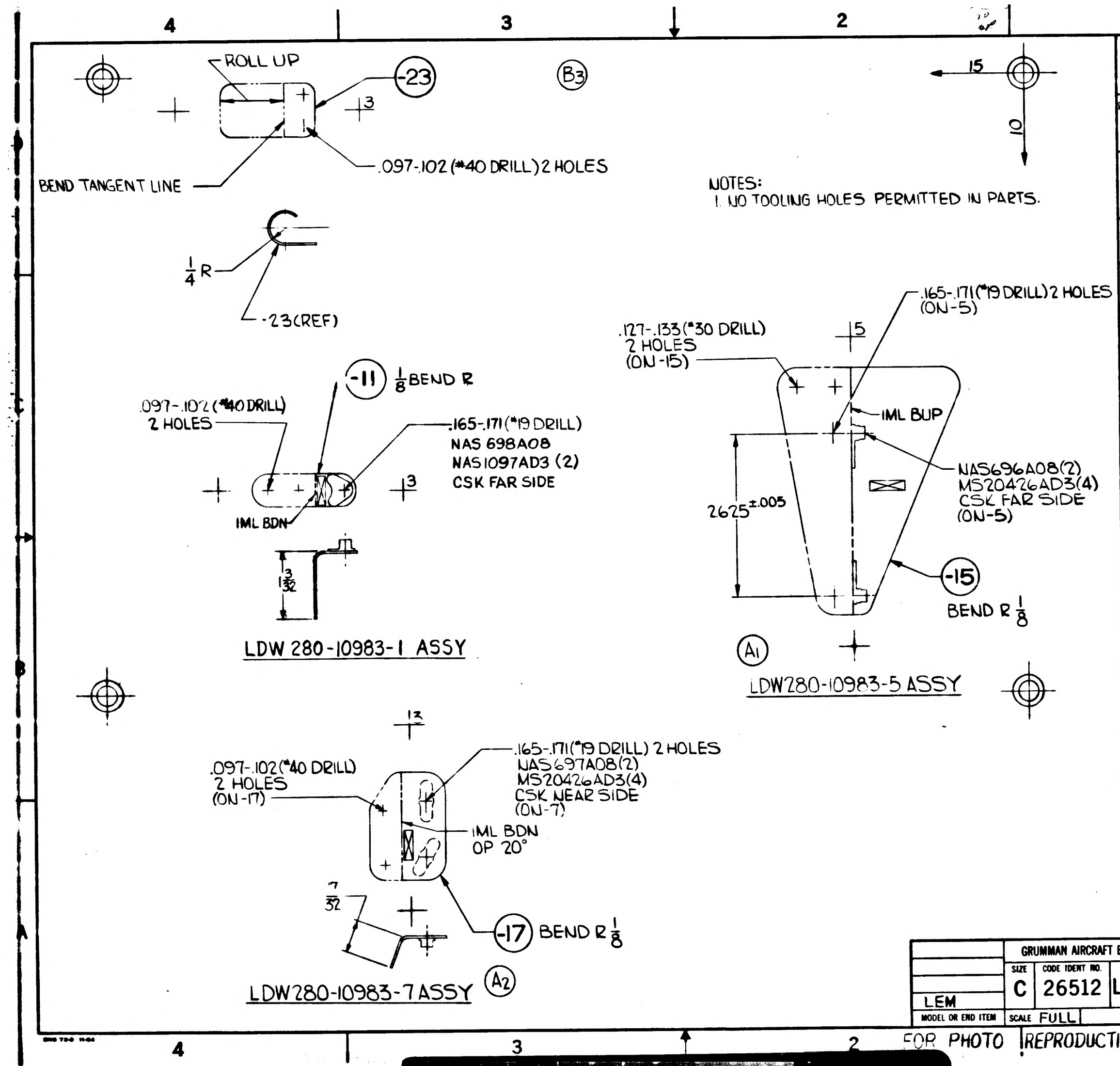
SIZE	CODE IDENT NO.		
B	26512	LDW280-10983	B

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


4
3
2
1
ROLL UP
-23
B3
+3
.097-.102 (#40 DRILL) 2 HOLES
BEND TANGENT LINE
1/4 R
-23(REF)
15
10
-11
1/8 BEND R
.097-.102 (#40 DRILL)
2 HOLES
.165-.171 (#19 DRILL)
NAS 698A08
NAS1097AD3 (2)
CSK FAR SIDE
+3
IML BDN
1 3/32
LDW 280-10983-1 ASSY
.127-.133 (#30 DRILL)
2 HOLES
(ON-15)
+5
.165-.171 (#19 DRILL) 2 HOLES
(ON-5)
IML BUP
NAS696A08(2)
MS20426AD3(4)
CSK FAR SIDE
(ON-5)
2.625±.005
-15
BEND R 1/8
A1
LDW280-10983-5 ASSY
+13
.097-.102 (#40 DRILL)
2 HOLES
(ON-17)
.165-.171 (#19 DRILL) 2 HOLES
NAS697A08(2)
MS20426AD3(4)
CSK NEAR SIDE
(ON-7)
IML BDN
OP 20°
7/32
-17
BEND R 1/8
LDW280-10983-7 ASSY
A2

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL $\sqrt{}$ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	✓
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		R
LEM	C	26512	LDW280-10983	B
	SCALE FULL			SHEET 3.00

FOR PHOTO REPRODUCTION

K2

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LEO 280 | EO NO. 897
CONTROL INFO NO. LDW280B2640

THIS EO CANCELS CHANGES LISTED ON LEO 860 FOR THE FOLLOWING DRAWINGS:

CANCELLED CHANGE NO.	DRAWING NO.	DRAWING TITLE	CANCELLING CHANGE NO.
B5	LDW280-10983	CLIP ASSY	B6 ✓
B3	LDW280-11019	HAT, CABIN FAN, HEAT EXCH.	B4

LFM

(5)

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD #2508, CCA 858 Ref TWX: LTX-700-32 (3/7/68)

REASON FOR EO: GFE & CFE STOWAGE

DESCRIPTION OF EO: CANCELS CHANGES ON LEO860

GAEC EO RELEASE: VK 3/21/8

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO. FI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 96	LTA-8 (18)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK NOT | SCRAP REQ'D

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
APPROVED BY				FNR cw				
DATE	3/14/68			3-14-68	3/18/68		3/18/68	3/19/68
G	VDI							

PRIORITY: C
DRAWING TITLE: SEE ABOVE
DRAWING NO.: LEO 280
EO NO.: 897

3/18/68
ISSUED BY F BADE Y7033 SECTION VEH-DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-10984A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23072	LM-15(45)	2
		LM-14(44)	2
		LM-13(43)	2
		LM-12(42)	2
		LM-11(41)	2
		LM-10(40)	2
		LM-9(39)	2
		LM-8(38)	2
		LM-7(37)	2
		LM-6(36)	2
		LM-5(35)	2
		LM-4(34)	2
	L	LM-3(33)	2
	LDW280-23072	LTA-3(13)	2
	LDW280-28072	LM-2(32)	2
	LDW280-28072	LM-1(31)	2
LM	LDW280-28072	LTA-8(18)	2
PART NO. LDW280-10984-15		GAEC SCH NO. 31	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23072	LM-6(36)	2EA
		LM-5(35)	2EA
		LM-4(34)	2EA
		LM-3(33)	2EA
	LDW280-23072	LTA-3(13)	2EA
	LDW280-28072	LM-2(32)	2EA
	LDW280-28072	LM-1(31)	2EA
LM	LDW280-28072	LTA-8(18)	2EA
PART NO. LDW280-10984-17 & -19		GAEC SCH NO. 31	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23072	LM-6(36)	1EA
		LM-5(35)	1EA
		LM-4(34)	1EA
		LM-3(33)	1EA
	LDW280-23072	LTA-3(13)	1EA
	LDW280-28072	LM-2(32)	1EA
	LDW280-28072	LM-1(31)	1EA
LM	LDW280-28072	LTA-8(18)	1EA
PART NO. LDW280-10984-11, -12, -13 & -14		GAEC SCH NO. 31	

WORK PKG. FUNCTION NO. 110 3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED	—	GRUMMAN REL^c INFO A	
LAST DASH NO. USED	-19	PRIM NO. 215	JK(001) MP-14 A-3/11/7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/64 ±.010 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM
DOCUMENTATION TYPE II

DRAWN BY	H. FORSCH 3/2	RELIABILITY	
LAYOUT BY			
CHECKED BY			
VEH DES INT	W. BISCHOFF		
GROUP LEADER	J. PUSATERI 3-28-66		
STRUCTURES	B. WHITMAN	PROJ ENGR	J. ALBER 3/30/66
STRUCTURES		REL GROUP	C. BOTTI 4/1/66
WEIGHTS	D. ROBESCH		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DOUBLER
ASCENT STAGE - CABIN - FRONT BEAM
EQUIP. LINES

SIZE	CODE IDENT NO.		
B	26512	LDW280-10984	A
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 12-65

SUPERSEDES LDW280-10984 NC 4/1/66

01 NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
									RETRACED NO CHG. LAST REV NC. ADDED SHEETS 1.10, 2.00 & 3.00. LOFTED DWG WAS DIMENSIONED DWG. R.COPPOLA 2/23/67						
A	1	1.10 & 3.00						EO A1	IN FIELD & B/M ADDED $\frac{3}{32}$ BEND R. FOR -13 & -14	LTA-8, LTA-3	✓		R. Coppola 2/23/67		
	2	1.10 & 3.00						EO A2	ON -11 & -12 REVISED TRIM. REMOVED "5 EQUAL SPACES", "9 EQUAL SPACES" & "$4\frac{31}{32}$" DIMS. ADDED "$1\frac{15}{16}$, $5\frac{9}{16}$, $3\frac{5}{8}$, $\frac{13}{16}$, $1\frac{3}{4}$ & $\frac{1}{4}$", "6 EQUAL SPACES = $3\frac{15}{16}$" & "3 EQUAL SPACES = $1\frac{13}{16}$" & "$\frac{9}{32}$ R (TYP)	LM-1 THRU LM-6	-11 -12				
	3	1.10 & 3.00						EO A3	IN FLD FOR -11 & -12 REVISED HOLE PATTERN		✓				
	4	1.00 & 1.10						Ⓡ	FOR -15 ONLY ADDED LM-7 THRU LM-15 EFF	LM-7 THRU LM-15	NCT	REQD	B.	3-10-67	3-11-67

CHG APPROVED										
LTR	GROUP LDR	VEH DES	STRUCTURES	STRUCTURES	PROJ.					
A	—	Phillips 3/6/67	3-9							

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10984	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	LDW280-10984-19	E		CLIP	AL ALLOY SH	QQ-A-250/4	2024-T3	.032 × 1 × 3	NONE	88	
	17			CLIP		QQ-A-250/4	2024-T3	.032 × 1 × 3	NONE	88	
	-15			DOUBLER		QQ-A-250/13	7075-T6	.032 × 2 × 3	NONE	88	
	-14			ANGLE		QQ-A-250/4	2024-0	.040 × 2 × 8	T3/T42	88	
	-13			ANGLE		QQ-A-250/4	2024-0	.040 × 2 × 8	T3/T42	88	
	-12			DOUBLER		QQ-A-250/13	7075-T6	.055 × 7 × 8	NONE	88	
	LDW280-10984-11	E		DOUBLER	AL ALLOY SH	QQ-A-250/13	7075-T6	.055 × 7 × 8	NONE	88	

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC
						T42	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

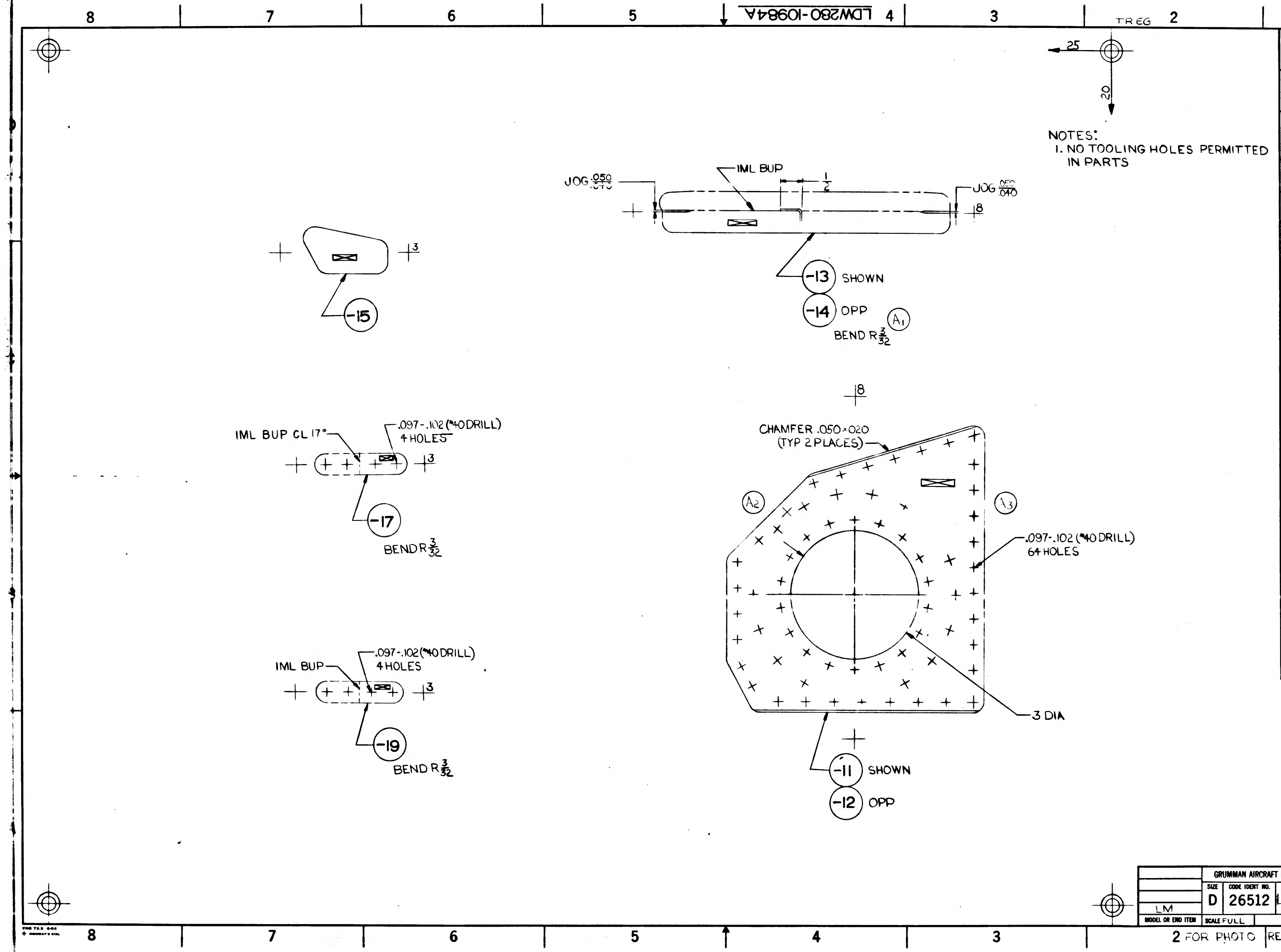
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10984	A
SCALE NONE			SHEET 2.00

ENG 77.2 5-64

01

NAS 9-1100


TREG
25
20
JOG .050/.040
IML BUP
1/2
JOG .050/.040
8
-13 SHOWN
-14 OPP
A1
BEND R 3/32
3
-15
18
CHAMFER .050×.020
(TYP 2 PLACES)
A2
A3
.097-.102 (#40 DRILL)
64 HOLES
3 DIA
-11 SHOWN
-12 OPP
IML BUP CL 17°
.097-.102 (#40 DRILL)
4 HOLES
3
-17
BEND R 3/32
IML BUP
.097-.102 (#40 DRILL)
4 HOLES
3
-19
BEND R 3/32

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	✓
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	D	26512	LDW280-10984	A
	SCALE FULL		SHEET 3 00	

FOR PHOTO REPRODUCTION

K3

LDW280-10984A

01 NAS 9-1100

AHe

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW280-10984 | EO NO. B1
CONTROL INFO NO. LM-3-6883

IN MOD BLOCK

REMOVE LM-7(37) THRU LM-15 (45) EFF FROM -15

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐

REASON FOR EO: -15 NOT REQD ON N.H.A FOR LM-7 (37) THRU LM-15(45)

DESCRIPTION OF EO: NOTED ABOVE

GAEC EO RELEASE (3)

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-7 (37)	
		THRU	
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			-15

APPROVED BY	Jgs			J.K.	BM		B.H.
DATE	5/29/69			5/29/69	5/8/69	5-8-69	5/29/69	5/21/69
	VD1	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	DOUBLER N2 - CABIN FRONT BEAM EQUIP LINES	LDW280-10984	B1

ISSUED BY Y.P.E. G. Rien X2151 SECTION VD1 GROUP NO. 335 PL 25

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NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10984		EO NO. B2
CONTROL INFO NO. LM-5-21835		

THIS IS A "REVISION OF EO "B1"

IN-15 MODEL BLOCK S/B

1 REQ'D ON N/A LDW280-23072 EFF. LM-8(38) THRU LM-15(45)

WAS

REMOVE LM-7(37 THRU LM-15(45) EFF FROM -15

DETAIL SPEC REQ	☐	CL II ENGRG CHG	✓	CL I ENGRG CHG	☐	(5)

REASON FOR EO: TO AGREE WITH N/A REQMTS. REMOVED IN ERROR

DESCRIPTION OF EO: REF EO "B1" NOTED ABOVE

GAEC EO RELEASE: Ⓡ VC

MODEL	EFFECTIVITY PROCURING ACTIVITY NO.	EFFECTIVITY GAEC UNIT NO.	EFFECTIVITY SUB CONTR UNIT NO.
LM	LM-8(38) THRU LM-15(35		

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG ✓	RECORD EO	REWORK	SCRAP ✓

APPROVED BY	JCB			FDR/N	RH			Both	
DATE	6/9/69			6/18/69	6-11-69	6-11-69	6/18/69	6/12/69	
	VD1	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG		

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	DOUBLER ~ A/S-CABIN-FRONT BEAM EQUIP. LINES	LDW280-10984	B2

ISSUED BY LIAISON C. COSMA x 86755 SECTION VD1 GROUP NO. 280 PL 5

01

NAS 9-1100

AAP

ENG [illegible] REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-10984		EO NO. B3	
CONTROL INFO NO. LM-5-21909			

DESCRIPTION OF EO

THIS IS A REVISION OF EO B2

IN-15 MODEL BLOCK

1 REQ'D. ON N/A LDW280-23072
EFF. LM-8(38) THRU LM-11 (41) & LM-13(43)
WAS
1 REQ'D. ON N/A LDW280-23072 EFF. LM-8(38) THRU LM-15(45)

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG	

(5)

REASON FOR EO: DOUBLER REPLACED BY HEVIER FLANGE ON LDW280M10440-19 WEB

REF. EO B2 DESCRIPTION OF EO: NOTED ABOVE

GAEC EO RELEASE: R SK [illegible] 8-7-96

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-12(42)	
		LM-14(44)	
		LM-15(45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS										
✓			✓	APPROVED BY	FNR			—	J.M			
				DATE	2-28-69			—	7-30-69	7-30-69	7/31/69	7/30/69
REVISE DWG	RECORD EO	REWORK	SCRAP		VDE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	DOUBLER ~ A/S ~ CABIN ~ FRONT BEAM ~ EQUIP. LINES	LDW280-10984	B3

ISSUED BY LIAISON C. COSMA x86755 SECTION V.D.I. GROUP NO. 280 PL 5

01 NAS 9-1100

LDW280-10985 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	LEM-6(36)	1 EA
		LEM-5(35)	1 EA
		LEM-4(34)	1 EA
		LEM-3(33)	1 EA
		LEM-2(32)	1 EA
		LEM-1(31)	1 EA
LEM	LDW280-28159	LTA-8(18)	1 EA

PART NO. LDW280-10985-15 & -17

GAEC SCH NO. 30-

MODEL OR END ITEM / NEXT ASSY / MODULE OR SER NO. / REQD PER MODULE OR END ITEM / PART NO. / GAEC SCH NO.

MODEL OR END ITEM / NEXT ASSY / MODULE OR SER NO. / REQD PER MODULE OR END ITEM / PART NO. / GAEC SCH NO.

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -17

GRUMMAN REL INFO

PRIM NO. VE(001) 215 MPIZA R 5/29

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY HERB. SCHWETER 4/16/66

RELIABILITY

LAYOUT BY A. PFORTSCH

CHECKED BY

GR LEADER PHENTON ACP 4/19

VEH DES INT 4-19

STRUCTURES 4/20

STRUCTURES HILDEEMAN 4/20

WEIGHTS 5-12

PROJ ENGR 5-12

REL GROUP 5-16

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

WEB
ASCENT STAGE ~ MID SECT - THERMAL
SHIELDING BOTTOM L.H. FWD.

SIZE B

CODE IDENT NO. 26512

LDW280-10985 A

SCALE NONE

SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	~~STRUC LTR~~	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
												REWORK	SCRAP			
A	1	1.00, 1.10 2.00 & 3.00						✓		SHEET 1 OF 4 WAS SH 1 OF 3, ADDED SHEET 1.10 ADDED -15 REMOVED -11, ADDED -17 REMOVED -13 JS	NOTED		-11 & -13	HERB. SCHWETZ 4-22-66		5/11/6

FOR CONTINUATION OF REVISIONS SEE SHEET

ENG 77.3 5-64

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10985	A
SCALE NONE			SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10985-17	E	WEB	SEE NOTES 1,2,3&4			.020x20¼x23⅞	CM		4B
		LDW280-10985-15	E	WEB	SEE NOTES 1,2,3&4			.020x24⅞x47	CM		6-B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						CM	CHEM MILL	LSP14-26100

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

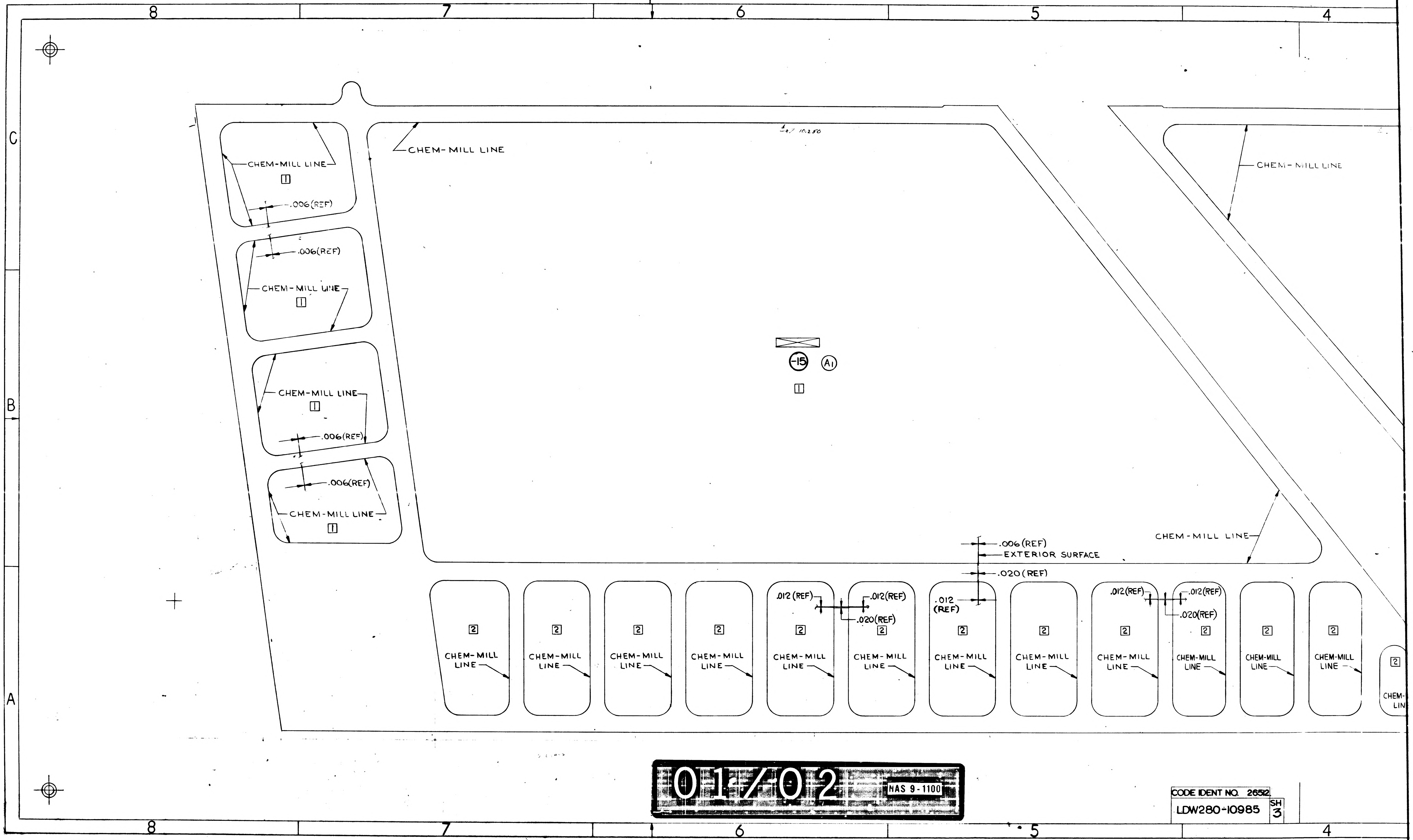
SIZE B | CODE IDENT NO. 26512 | LDW280-10985 | A

SCALE NONE | SHEET 2.00

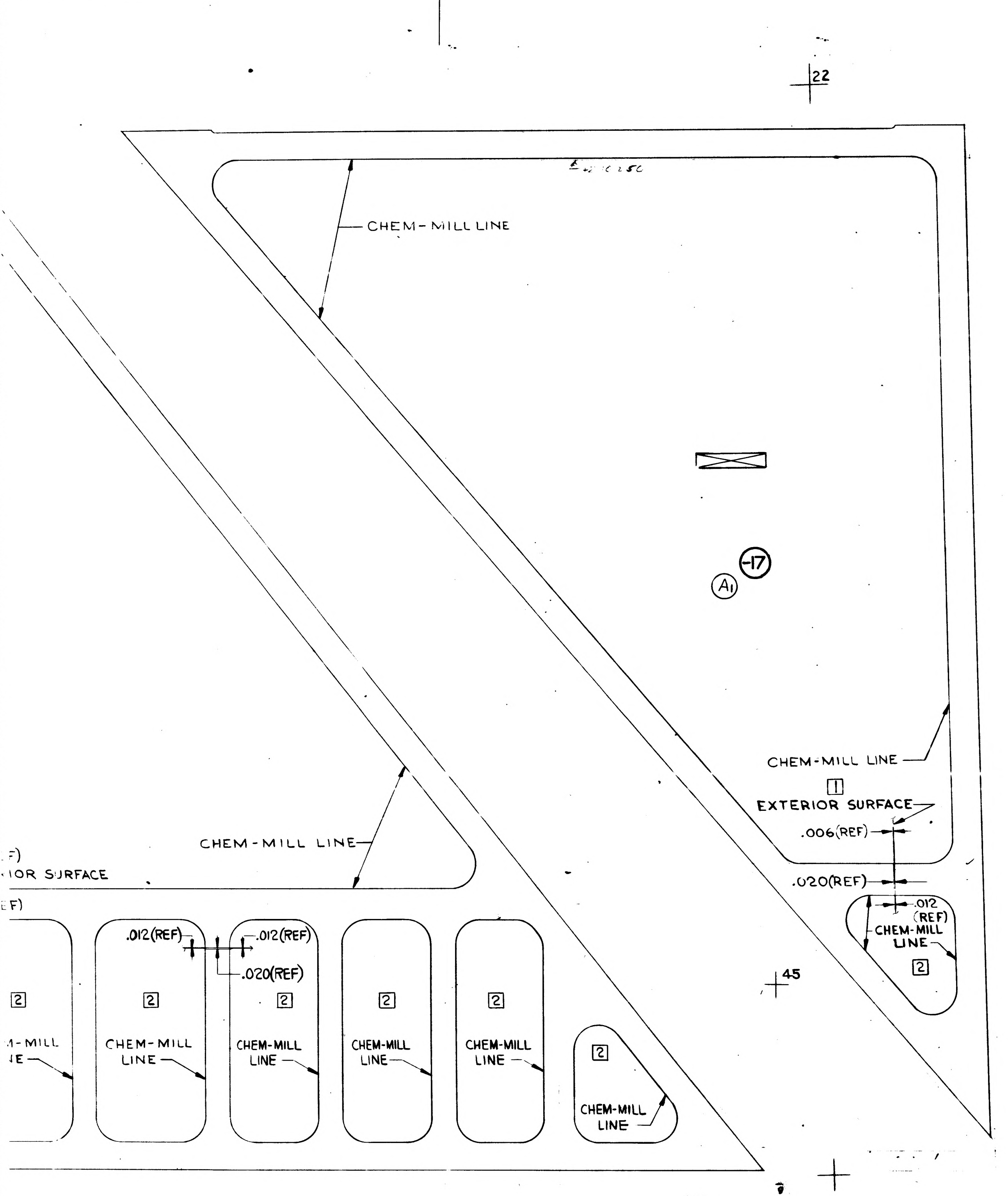
ENG 77.2 7-65

01

NAS 9-1100



8
7
6
5
4
C
B
A
CHEM-MILL LINE
1
.006(REF)
.006(REF)
CHEM-MILL LINE
1
CHEM-MILL LINE
1
.006(REF)
.006(REF)
CHEM-MILL LINE
1
CHEM-MILL LINE
CHEM-MILL LINE
-15
A1
1
CHEM-MILL LINE
.006 (REF)
EXTERIOR SURFACE
.020 (REF)
.012 (REF)
.012 (REF)
.020 (REF)
.012 (REF)
.012 (REF)
.012 (REF)
.020 (REF)
2
CHEM-MILL LINE
CHEM-MILL LINE
01/02
NAS 9-1100
CODE IDENT NO. 26512
LDW280-10985
SH 3
LDW280-10985 SH3



NOTES:

1. MAKE LDW280-10985 FROM 2024-T3 ALCLAD BOTH SIDES (SKIN QUALITY) FINISH ALUMALITE 200/RI/EBIO WHICH MAY BE PURCHASED FROM ALUMINUM CO OF AMERICA (CODE IDENT. 01634)
2. THE SURFACE DESIGNATED "EXTERIOR" SHALL BE PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROL PRODUCTS INC FARMINGDAL, N.Y.
3. REMOVE FINISH ALUMALITE 200/RI/EBIO (ANODIZE) FROM INTERIOR SURFACE & REFINISH AS NOTED.
4. THE INTERIOR SURFACE TO BE CHEM-MILLED IN ACCORDANCE WITH LSP14-26.100 FINISH ENTIRE SURFACE # 76 (LSP-9010).
5 NO TOOLING HOLES PERMITTED IN PARTS.

Ⓐ1

LDW280-10985 -15 & -17

CHEM-MILL LINE TOLERANCE:
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
1	$.006^{+.003}_{-.001}$	.014(REF)
2	$.012^{+.003}_{-.001}$	.008(REF)

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	√

DWG SIZE 28 X 82

PRINTING INFO ONLY

FULL SIZE SHEET AREA (30 X 84) — 17.5 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) — 4.375 SQ. FT.

PRINT TRIM LINE

LDW280-10985 A

LDW280-10985 A

R-25504

02/02

NAS 9-1100

CODE IDENT NO. 26512
LDW280-10985 SH 3

	R GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM MODEL OR END ITEM	SIZE H	CODE IDENT NO. 26512	LDW280-10985	A
	SCALE FULL		SHEET 3.00	

2/2

FOR PHOTO REPRODUCTION

K2

LDW280-10985 SH2

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO
EO NO.
CONTROL INFO NO

DWG. NO.	DASH NO. *	TITLE	CHANGE NO	NEXT ASSEMBLY (PER MODULE)	REQUIREMENTS	NUMBER REQD.
LDW280-10[illegible]3	-15	SEE DWG.	B1	LDW280-28159	ADD QUAL. TEST TO EFF.	1
LDW280-10898	-15		B1			
	-17					
LDW280-10985	-15		B1			
	-17					
LDW280-10986	-15		B2			
	-17					
LDW280-10987	-11		B2			
	-13					
	-15					
	-17					
	-19					
LDW280-10989	-15		B1			
	-17					
LDW280-10990	-15		C1			
	-17					
	-23					
	-25					
LDW280-10991	-17 -23 -25 -27 -29 -30		C3			
LDW280-10992	-13		C2			
	-15					
	-17					
	-21					
LDW280-10993	-15		C1			
	-17					
	-19					
	-21					
	-23					
LDW280-10994	-16		B3			
	-17					
LDW280-10995	-17		B1			
LDW280-10996	-13		B1			
LDW280-10997	-11		B1			
LDW280-11000	-15 -17 -21		B1			
LDW280-11001			B1			
	-13					1
LDW280-11002	-11		B1			5
	-13					5
	-15					5
LDW280-11003	-17 -19 -21 -23		B1			6 6 6
LDW280-11007	-11		B1			1
	-13					
LDW280-11012	-11		C1			
	-15					
	-17					
	-19	SEE DWG.		LDW280-28159	ADD QUAL. TEST TO EFF.	

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.

ISSUED BY ______ SECTION ______ GROUP NO ______ PL

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

EO. NO LE0280
EO NO. 327
CONTROL INFO NO. LDW280A0538

DWG. NO.	DASH NO. *	TITLE	CHANGE NO.	NEXT ASSEMBLY	REQUIREMENTS	NUMBER REQD.
LDW280-11194	-11	SEE DWG	B2	LDW280-28159	ADD QUAL. TEST TO EFF.	1
LDW280-11331	-11		A1	LDW280-28378		
	-13			-28378		
LDW280-28379	-1		A1	LDW280-28159		1
LDW280M10604	-1		B4	-28159		2
	-7			-28162		2
LDW280M10605	-1		B2	-28159		1
LDW280M10606	-3-1		B3	-28159		
LDW280M10609	-5		B3	-28159		
LDW280M10610	-3		C4	-28159		
LDW280M10869	-3		B4	LDW280-28159		
	-4			-28159		
LDW280M10902	-1		A1	-28150		
LDW280M10905	-1		A2	-28159		
LDW280M10952	-3		B1	-28159		
LDW280M10955	-1		A1			
LDW280M10956	-1		A1			
LDW280M10969	-1		B2			
LDW280M10977	-1		A2	-28159		
LDW280M10940	-1		B2	-28153		
LDW280M10975	-1		A2	-28153 -51153		
LDW280-11004	-11		B1	-28159		4
	-13					4
	-15					4
LDW280-11006	-15		B1			1
	-13	SEE DWG.		LDW280-28159	ADD QUAL TEST TO EFF.	1
	-17					1
	-19					1
	-21					1
	-23					1

FOR THE PRECEEDING DRAWINGS: ADD QUALIFICATION TEST EFFECTIVITY FOR DASH NO'S * NOTED.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG
	✓	

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
TO ADD QUALIFICATION TEST	FOR - * ADDED QUALIFICATION TEST EFFECTIVITY	10/24

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
LM		NOTED		✓		NOT REQD		10-10-66 / 10/11			10/11	10/11			10/12/66

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DWG.	LE0280	327

ISSUED BY G. W. GREEN X7625 SECTION VEH. DES. INT GROUP NO. 335 PL 35 EMP

01

NAS 9-1100

LDW280-10986 A

LEM	LDW280-28159	LEM-6 (36)	1 EA
		LEM-5 (35)	
		LEM-4 (34)	
		LEM-3 (33)	
		LEM-2 (32)	
		LEM-1 (31)	
LEM	LDW280-28159	ITA-8 (18)	1 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-10986-15 & -17		GAEC SCH NO. -30	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -17

GRUMMAN REL INFO A

PRIM NO. 215 | LE(001) | MP12 | 4-2

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	E.ERICKSON 4-16-66	RELIABILITY	
LAYOUT BY	A.PFORTSCH 3-3-66		
CHECKED BY	4-20-66		
GR.LEADER	P.HENTON (A.C.P. 4/20		
VEH DES INT	W.BISCHOFF / CEB 4/20		
STRUCTURE	4/21	PROJ ENGR	5-3-66
STRUCTURE	HILDERMAN 4/21	REL GROUP	Botti 5-4-66
WEIGHTS	4-29		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

WEB
ASCENT STAGE-MID SECT.-THERMAL SHIELDING
BOTTOM L.H.

SIZE B | CODE IDENT NO. 26512 | LDW280-10986 | A

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00, 1.10, 2.00, 3.00					✓	EO A1	SH 1.00 OF 4 WAS SH 1.00 OF 3 ADDED SH 1.10. REMOVED -11, -13, ADDED -15, -17	LTA-8, LEM-1 -2, -3, -4, -5, -6		-11, -13	T. FREDA 6-29-66	☒	☒

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABIALITY					
A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10986	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10986-17	E	WEB	AL ALY ALCLAD SH	SEE NOTE	1 & 2	.020 x 24 x 54 1/2	CM	SEE NOTE 3 & 4	
								LDW280-10986-15	E	WEB	AL ALY ALCLAD SH	SEE NOTE	1 & 2	.020 x 17 1/4 x 27 3/4	CM	3 & 4	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
CM	CHEM-MILLING	LSP14-26100
76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10986	A

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

K

DWG. NO. LDW280-10986	EO NO. B1
CONTROL INFO NO. LM-3-4035	

IN F/D. REVISE NOTES 3 & 4 TO READ:

NOTE: 3. REMOVE FINISH ALUMALITE 200/R1/EB10 (ANODIZE) FROM INTERIOR SURFACE & REFINISH AS NOTED.
(WAS: REMOVE FINISH ALUMALITE 200/R1/EB10 (ANODIZE FROM INTERIOR SURFACE & REFINISH AS NOTED ✱ (✱IF NO C-M IS BEING DONE FINISH #76 (LSP-14-9010))

4. THE INTERIOR SURFACE TO BE CHEM-MILLED IN ACCORDANCE WITH LSP14-26100 FINISH ENTIRE SURFACE #76 (LSP-14-9010)

DECRIPTION CONTINUED (WAS: (CHEM-MILLING ENTIRE INTERIOR SURFACE) THE INTERIOR SURFACE TO BE CHEM-MILLED IN ACCORDANCE WITH LSP14-26100 FROM .020 TO $^{+.003}_{-.000}$ TOTAL THICKNESS FINISH ENTIRE SURFACE #76 (LSP14-9010))

IN MOD. BLK. REV. EFF. -15 & -17)
LTA8 (18), LM 1 & 2 (31 & 32) [WAS LTA8 (18), LM 1, 2, 3, 4, 5 & 6 (31, 32, 33, 34, 35 & 36]

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	3

REASON FOR EO: INCORRECT NOTES

DESCRIPTION OF EO: IN NOTE 3. REMOVED (✱ IF NO C-M IS BEING DONE FINISH #76 PER LSP-14-9010)
REVISE NOTE 4 WAS AS ABOVE
REMOVED LM-3 (33) THRU LM-6 (36) EFFECT.

Ⓔ GAEC EO RELEASE: E

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
		LTA-8 (18)	
		LM-1 (31)	
LM		LM-2 (32)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
✓			✓	DATE	10/12			10/12	—	10-5-66	10-6-66	10-5-66
REVISE DWG	RECORD EO	REWORK	SCRAP	10/5/66	V.H	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	A/S M/S WEB THERMAL SHIELD. BOTT. L.H	LDW280-10986	B1

ISSUED BY LIAISON / VIC BOLLO / A. PFORTCH 2151 SECTION VD1 GROUP NO. 335 PL 35

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO
EO NO.
CONTROL INFO NO.

DWG. NO.	DASH NO. *	TITLE	CHANGE NO	NEXT ASSEMBLY (PER MODULE)	REQUIREMENTS	NUMBER REQD.
LDW280-10877	-15	SEE DWG.	B1	LDW280-28159	ADD QUAL TEST TO EFF.	1
LDW280-10898	-15		B1			
	-17					
LDW280-10985	-15		B1			
	-17					
LDW280-10986	-15		B2			
	-17					
LDW280-10987	-11		B2			
	-13					
	-15					
	-17					
	-19					
LDW280-10989	-15		B1			
	-17					
LDW280-10990	-15		C1			
	-17					
	-23					
	-25					
LDW280-10991	-17		C3			
	-23					
	-25					
	-27					
	-29					
	-30					
LDW280-10992	-13		C2			
	-15					
	-17					
	-21					
LDW280-10993	-15		C1			
	-17					
	-19					
	-21					
	-23					
LDW280-10994	-16		B3			
	-17					
LDW280-10995	-17		B1			
LDW280-10996	-13		B1			
LDW280-10997	-11		B1			
LDW280-11000	-15 -17 -19 -21		B1			
LDW280-11001			B1			
	-13					1
LDW280-11002	-11		B1			5
	-13					5
	-15					5
LDW280-11003	-17 -19 -21 -23		B1			6 6 6
LDW280-11007	-11		B1			1
	-13					
LDW280-11012	-11		C1			
	-15					
	-17					
	-19	SEE DWG.		LDW280-28159	ADD QUAL. TEST TO EFF.	

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	
REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE	
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO. / GAEC UNIT NO. / SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG / RECORD EO	DISPOSITION OF PARTS: REWORK / SCRAP
APPROVED BY / DATE	SUPPORT / RELIAB GROUP / GROUP LEADER / STRESS GROUP / LIAISON ENGRG / PROJ ENGRG / GOVT	PRIORITY / DRAWING TITLE	DRAWING NO. / EO NO.

ISSUED BY ________ SECTION ________

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

EO NO. LE0280
EO NO. 327
CONTROL INFO NO. LDW280A0538

DWG. NO.	DASH NO. *	TITLE	CHANGE NO.	NEXT ASSEMBLY	REQUIREMENTS	NUMBER REQD.
LDW280-11194	-11	SEE DWG.	B2	LDW280-28159	ADD QUAL. TEST TO EFF.	1
LDW280-11331	-11		A1	LDW280-28378		
	-13			-28378		
LDW280-28378	-1		A1	LDW280-28159		1
LDW280M10604	-1		B4	-28159		2
	-2			-28162		2
LDW280M10605	-1		B2	-28159		1
LDW280M10606	-3-1		B3	-28159		
LDW280M10609	-5		B3	-28159		
LDW280M10610	-5		C4	-28159		
LDW280M10869	-3		B4	LDW280-28159		
	-4			-28159		
LDW280M10902	-1		A1	-28150		
LDW280M10905	-1		A2	-28159		
LDW280M10952	-3		B1	-28159		
LDW280M10955	-1		A1			
LDW280M10956	-1		A1			
LDW280M10969	-1		B2			
LDW280M10977	-1		A2	-28159		
LDW280M10940	-1		B2	-28153		
LDW280M10975	-1		A2	-28153 -51153		
LDW280-11004	-11		B1	-28159		4
	-13					4
	-15					4
LDW280-11006	-15		B1			1
	-13	SEE DWG.		LDW280-28159	ADD QUAL TEST TO EFF.	1
	-17					1
	-19					1
	-21					1
	-23					1

FOR THE PRECEEDING DRAWINGS: ADD QUALIFICATION TEST EFFECTIVITY FOR DASH NO'S * NOTED.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG ✓	
REASON FOR EO: TO ADD QUALIFICATION TEST	DESCRIPTION OF EO: FOR - * ADDED QUALIFICATION TEST EFFECTIVITY	GAEC EO RELEASE: 10/24	
MODEL: LM	EFFECTIVITY: PROCURING ACTIVITY NO. / GAEC UNIT NO.: NOTED / SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG ✓ / RECORD EO	DISPOSITION OF PARTS: NOT REQD (REWORK / SCRAP)
APPROVED BY / DATE: 10-10-66, 10/11, 10/11, 10/11	SUPPORT / RELIAB GROUP / GROUP LEADER / STRESS GROUP / LIAISON ENGRG / PROJ ENGRG / GOVT: 10/12/66	PRIORITY: C / DRAWING TITLE: SEE DWG.	DRAWING NO.: LE0280 / EO NO.: 327

ISSUED BY ________ SECTION VEH. DES. INT GROUP NO. 335 PL 35 EMP

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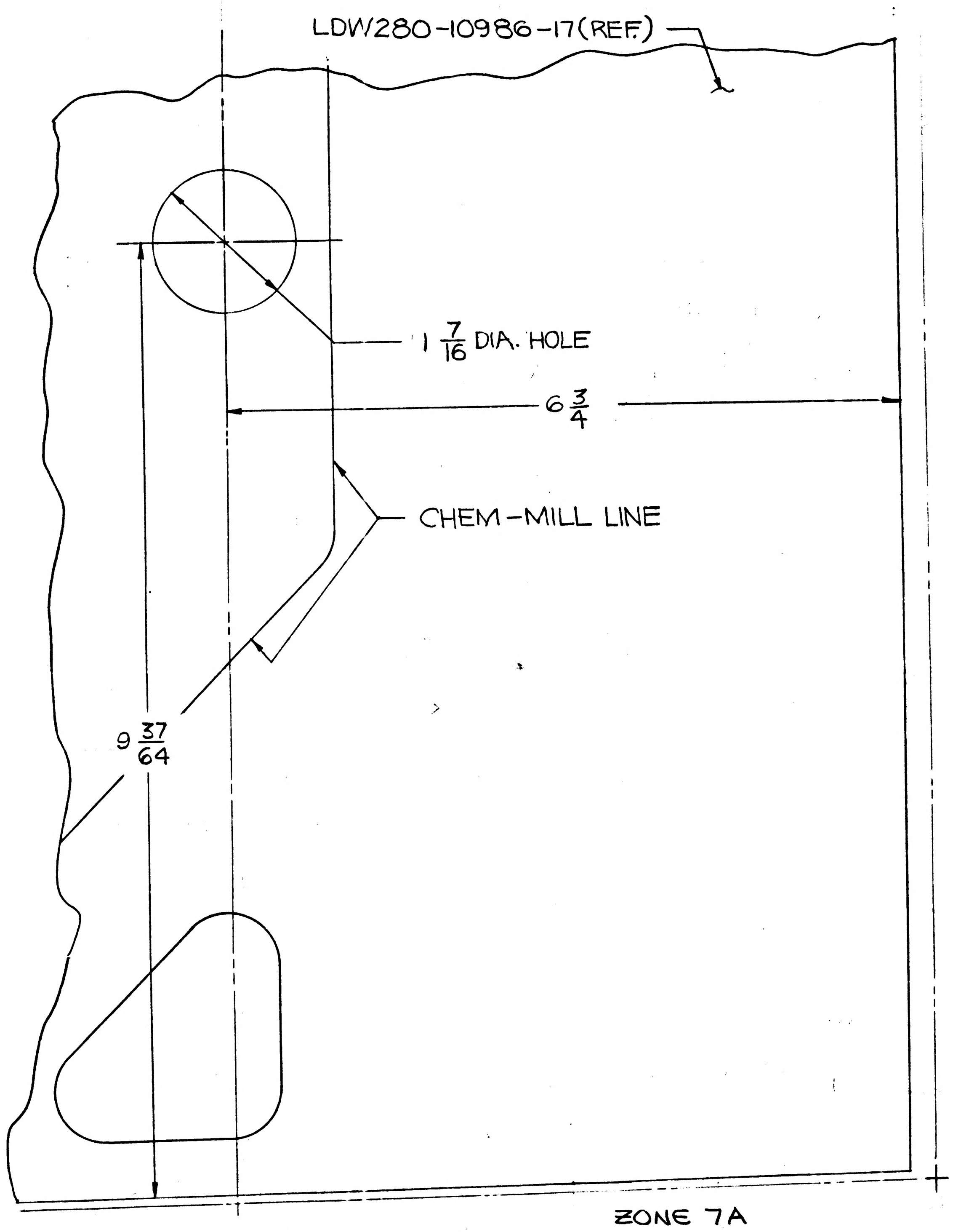
NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO.	LDW280-10986	EO NO.	B3
CONTROL INFO NO.	LDW280A-2906		

IN F/D ADD -1.437 DIA. HOLE SHOWN IN SKIN LDW280-10986-17 (REF.)



DETAIL SPEC REQ	☐	CL II ENGRG CHG	✓	CL I ENGRG CHG	☐	3

REASON FOR EO	DESCRIPTION OF EO
TO PROVIDE HOLE FOR SEP. DIST. MONITOR CABLE	IN F/D ON-17 ADDED 1 7/16 DIA. HOLE

GAEC C EO RELEASE: FR 11/23/6

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA8(18)	
LM		LM1,LM2	
LM		QUAL.TEST(90)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG	RECORD EO	REWORK	SCRAP
✓		-17 ✓	

APPROVED BY			V.D.				RMC	
DATE	11/3	4/4	11/22	11/3	11/9		11-14-66	11-22-66
#5	VD1	SUPPORT	~~RELIAB. GROUP~~ THERMO	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	WEB~A/S, M/S THERMAL SHIELDING BOTTOM L.H.	LDW280-10986	B3

ISSUED BY A.PFORTSCH C. GREEN /PAUL HENTON X1441 SECTION VEH. DES. INT. GROUP NO. 335 PL 35

01 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER *

DWG. NO. LDW280-10986
EO NO. B4
CONTROL INFO NO. LM-5-9842

THIS IS A REVISION OF EO B3

IN FIELD OF EO ADD:

NOT TO BE INCORPORATED ON LTA-8 (18)

PARTIAL RECORD EO

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		√

REASON FOR EO: THERMAL BLANKET ALREADY INSTALLED WHICH PREVENTS DRILLING HOLE

DESCRIPTION OF EO: REF EO B3
ADDED EO TO RECORD BLOCK FOR LTA-8 (18)

GAEC EO RELEASE: ✓ ✓ FR

EFFECTIVITY			
MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	~~SUB CONTR UNIT NO.~~
LM		LM-1 (31)	QUAL TEST (70)
LM		LM-2 (32)	
		LTA-8 (18)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS										
	✓	NOT REQD		APPROVED BY	JaP	V.G.L.				CH	RMc	
				DATE	12/15/66	12/16		12/14		12-6-66	12-7-66	12-6-66
REVISE DWG	RECORD EO	REWORK	SCRAP	1	VDI	~~SUPPORT~~ THERM	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	WEB A/S M/S THERMAL SHIELDING BOTTOM LH.	LDW280-10986	B4

ISSUED BY LIAISON J. McGILL x6452 SECTION VDI GROUP NO._____ PL 35

01 NAS 9-1100

LDW280-10987 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53159	QUALTEST(70)	1
		PA-1 (47)	1
		LM-15(45)	1
		THRU	
	LDW280-53159	LM-3(33)	1
	LDW280-28159	QUALTEST(70)	1
		LM-2(32)	1
		LM-1(31)	1
LM	LDW280 28159	LTA 8(18)	1
PART NO. LDW280-10987-11		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28159	QUALTEST(70)	1 EA.
LM	LDW280-28159	LM-2(32)	1 EA
LM	LDW280-28159	LM-1(31)	1 EA
LM	LDW280-28159	LTA-8(18)	1 EA
PART NO. LDW280-10987 -13,-15,-17,-21		GAEC SCH NO. 30—	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -21

GRUMMAN REL INFO B

PRIM NO. JK(001)

215 - ME-16 8-14/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES

$\pm\frac{1}{32}$ — $\pm\frac{1}{2}°$

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY	FEINER		
LAYOUT BY			
CHECKED BY			
GR LDR	Pfent. 4/16		
VEH DES.	W Beschnell 4/18		
STRUCT	W Feb 4/18	PROJ ENGR	
STRUCT	HILDERMAN 4/18	REL GROUP	4/16
WEIGHTS	4-20		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHANNELS - -Y80.25 - ASC. STAGE - M/S - LOWER THERMAL SHLD.

SIZE	CODE IDENT NO.		
B	26512	LDW280-10987	B
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	APPD
											REWORK	SCRAP			
A	I	1.00						A1	ADDED SH. 1.10 SH 1 OF 4 WAS SH 1 OF 3 ON SH 1.00. INF/D TRIMMED TAB OF -13 16 3/16 WAS 16 21/32 1 7/32 WAS 1 13/16	LTA-8(18) LM-1(31) THRU -6(36)	✓		ACP 9/30/66	9/30 EP	
	E1							®	ADDED DWG TOLER. REV EFF. LTA-8, LM-1, -2 (WAS LTA-8, LM-1 THRU -6)	NOTED		✓			
B	1	1.00, 2.00 3.00					✓	E.O.B1	IN FLD., B/M, & M/B. DELETE -19 & ADDED -21	LTA-8 (18) LM-1, -2		-19	S. CARANO 11-27-68		
	2	1.00					✓	LEO280-327	FOR -11, -13, -15, -17 & -19 ADDED QUALIFICATION TEST EFF.	QUALTEST(70)	NOT	REQD.			
	3	1.00					✓	LEO280-375	FOR -11 ADDED LM-3 (33) THRU LM-15 (45) EFF.	LM-3 THRU LM-15					
	4	1.00					✓	LEO280-506 LCD-1124	ADDED PA-1 (47) REQTS TO -11	PA-1 (47)					
	5	1.00					✓	LEO280-737 LCD2104	FOR -11 ADDED QUAL. TEST REQTS.	QUAL TEST (70)				F. Zukas 11-27-68	
	6						✓	®	REF LEO280-327 (B2) -19 S/B -21 HD	QUAL TEST	NOT	REQD		12-2-68	

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10987	B
SCALE NONE			SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMPLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10987-21	E	CHANNEL	AL ALY CLAD SHT	QQ-A-287	7075	.040 x 3 x 3	-T6	88	
		-17	E	↕	↕	↕	↕	.040 x 7 x 3	-T6	88	
		-15	E	↕	↕	↕	↕	.040 x 15 x 3	-T6	88	
		-13	E	↕	↕	↕	↕	.063 x 21 x 3	-T6	88	
		LDW280-10987-11	E	CHANNEL	1'. ALY CLAD SHT	QQ-A-287	7075	.063 x 22 x 3	-T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030
						-T6	HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10987	B

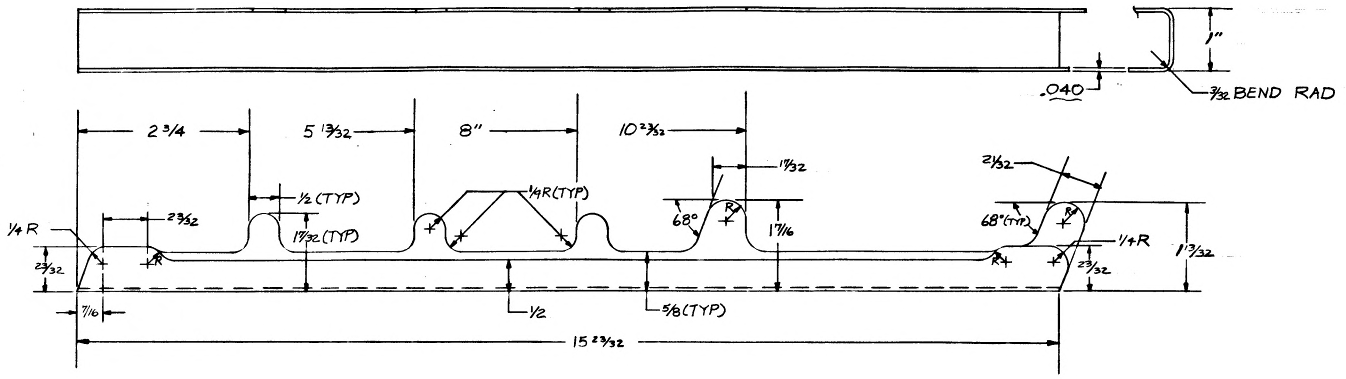
SCALE NONE

SHEET [illegible]

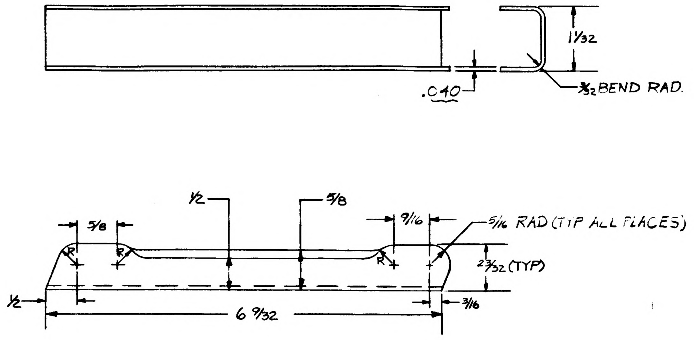
ENG 77.2 7-65

01

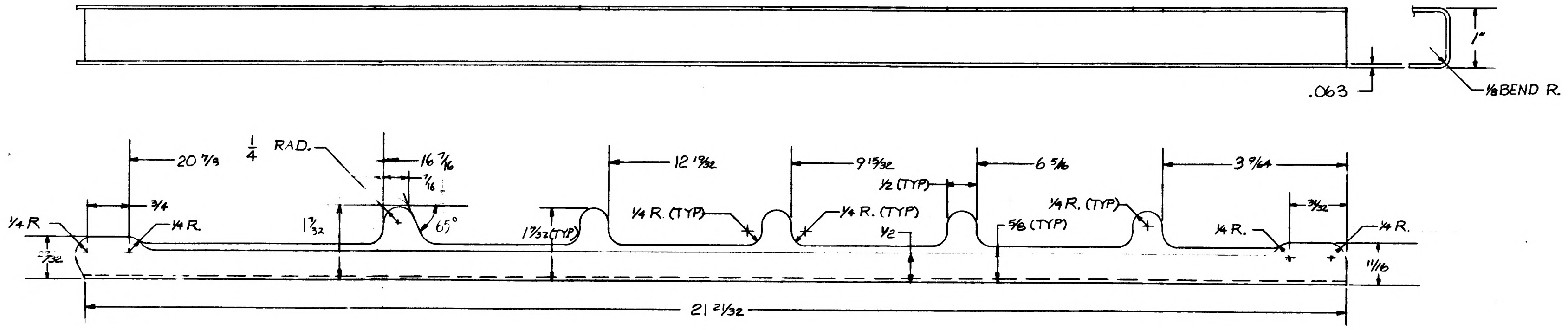
NAS 9-1100


1"
.040
3/32 BEND RAD
2 3/4
5 13/32
8"
10 23/32
1/4R (TYP)
1/2 (TYP)
17/32 (TYP)
1/4 R
23/32
7/16
68°
17/32
1 7/16
21/32
68° (TYP)
1/4R
1 3/32
1/2
5/8 (TYP)
15 23/32

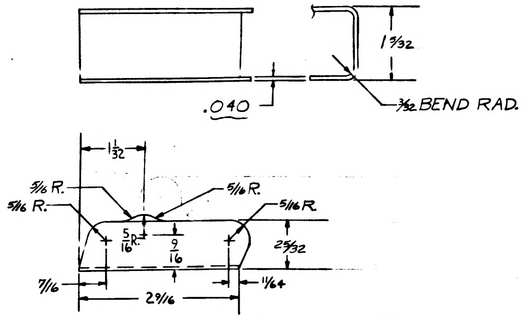
LDW280-10987-15


1 1/32
.040
3/32 BEND RAD.
1/2
5/8
3/8
9/16
5/16 RAD (TYP ALL PLACES)
23/32 (TYP)
1/2
6 9/32
7/16

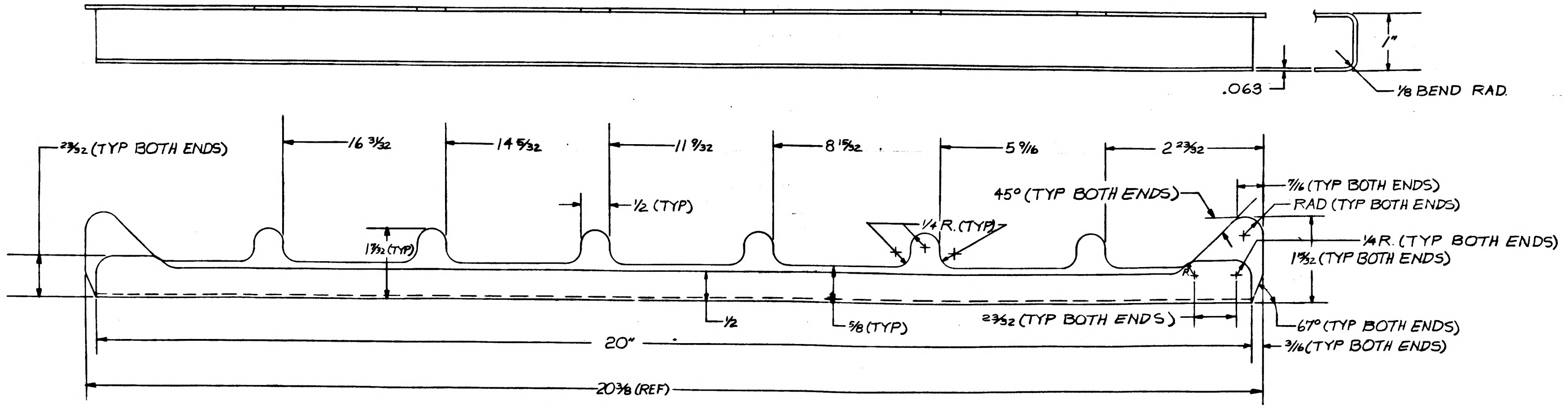
LDW280-10987-17


1"
.063
1/8 BEND R.
20 7/8
1/4 RAD.
16 7/16
7/16
12 19/32
9 15/32
6 5/16
3 9/64
3/4
1/4 R
1/4 R
23/32
1 7/32
65°
1 17/32 (TYP)
1/4 R. (TYP)
1/4 R. (TYP)
1/2 (TYP)
1/2
5/8 (TYP)
1/4 R. (TYP)
1/4 R.
3/32
1/4 R.
11/16
21 21/32

LDW280-10987-13


1 3/32
.040
1/32 BEND RAD.
1 1/32
5/16 R.
5/16 R.
5/16 R.
5/16 R.
5/32
9/16
23/32
7/16
2 9/16
1/64

LDW280-10987-21 (B1)


1"
.063
1/8 BEND RAD.
23/32 (TYP BOTH ENDS)
16 3/32
14 5/32
11 9/32
8 15/32
5 9/16
2 23/32
1/2 (TYP)
13/32 (TYP)
1/4 R (TYP)
45° (TYP BOTH ENDS)
7/16 (TYP BOTH ENDS)
RAD (TYP BOTH ENDS)
1/4 R. (TYP BOTH ENDS)
1 9/32 (TYP BOTH ENDS)
1/2
5/8 (TYP)
23/32 (TYP BOTH ENDS)
67° (TYP BOTH ENDS)
3/16 (TYP BOTH ENDS)
20"
20 3/8 (REF)

LDW280-10987-11

01

NAS 9-1100

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

LEM	SIZE E	CODE IDENT NO. 26512	LDW280-10987	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

LDW280-10988 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	LEM-2(32)	1 EA
LEM	LDW280-28159	LEM-1(31)	1 EA
LEM	LDW280-28159	LTA-8(18)	1 EA
PART NO. LDW280-10988-15&-17		GAEC SCH NO. 30SH-2	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -17

GRUMMAN REL INFO A		
PRIM NO.	(E(001)	
215	MP-A	8-31-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.030 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	R. GORTLER
LAYOUT BY	
CHECKED BY	
GR LEADER	PAUL HENTON 4/16
VEH DES INT	W. BISCHOFF
STRUCTURES	AJP. J.V FEB. 4-15
STRUCTURES	R. HILDERMAN 4-15
WEIGHTS	D. ROBESCH 4-19
PROJ ENGR	J. ALBER 4-19
REL GROUP	—

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHANNEL
ASCENT STAGE ~ MID SECT. -Z31.00
LOWER THERMAL SHIELD

SIZE B
CODE IDENT NO. 26512
LDW280-10988 A
SCALE NONE
SHEET 1.00 OF 4

77.1 12-65

THIS DWG ↑ SUPERSEDES LDW280-10988 "NO CHANGE" 4-15-66

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
									RETRACE~NO CHANGE~ LAST REV NO CHANGE SH 1.00 OF 4.00 WAS SH 1 OF 1	HERB. SCHWETER 8-11-66					
A	1	3.00					✓	EO A1	IN F/D-ADDED FLG VIEW TO -13 & -15 & CHEM-MILL LINES TO -15 ADDED BEND RELIEF TO -15	LEM-6 LEM-5 LEM-4 LEM-3 LEM-2 LEM-1 LTA-8			HERB. SCHWETER 8-11-66		
	2	2.00 3.00	4A				✓	EO A2	IN F/D & B/M~ CREATED -15 & DELETED -11 REVISED -13		-13	-11			
	3	2.00 3.00						EO A3	IN F/D~ ON-13 & -15 REVISED NOTE (ADDED) "EXCEPT AS NOTED"~ ON-15 ADDED CHEM-MILL TOL~ ADDED DWG TOL~ IN B/M ON-15 .100 MATL THICKNESS WAS .050		-13 & -15				
	4	1.00 2.00 3.00	5C						IN F/D ON -13 TAB 13/16 WAS 5/8 REMOVED -13 ADDED -17	LTA-8 LEM-2 LEM-1		-13			
	5	3.00							-15 PER EO A1 SHOULD BE -11 SEE EO A2		NOT	REQD			
	6	1.00						Ⓡ	IN MOD BLK REMOVED EFF LEM-4, LEM-5 & LEM-6 ER						

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10988	A
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10988-17	E	CHANNEL	AL ALY SH	QQ-A-250/13	7075 ALCLAD	.050×4⅛×13⅜	T6	88	5C
		LDW280-10988-15	E	CHANNEL	AL ALY SH	QQ-A-250/13	7075 ALCLAD	.100×5⅛×52⅛	CM T6	88	4A

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						CM	CHEM MILL	LSP14-26100
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10988	A

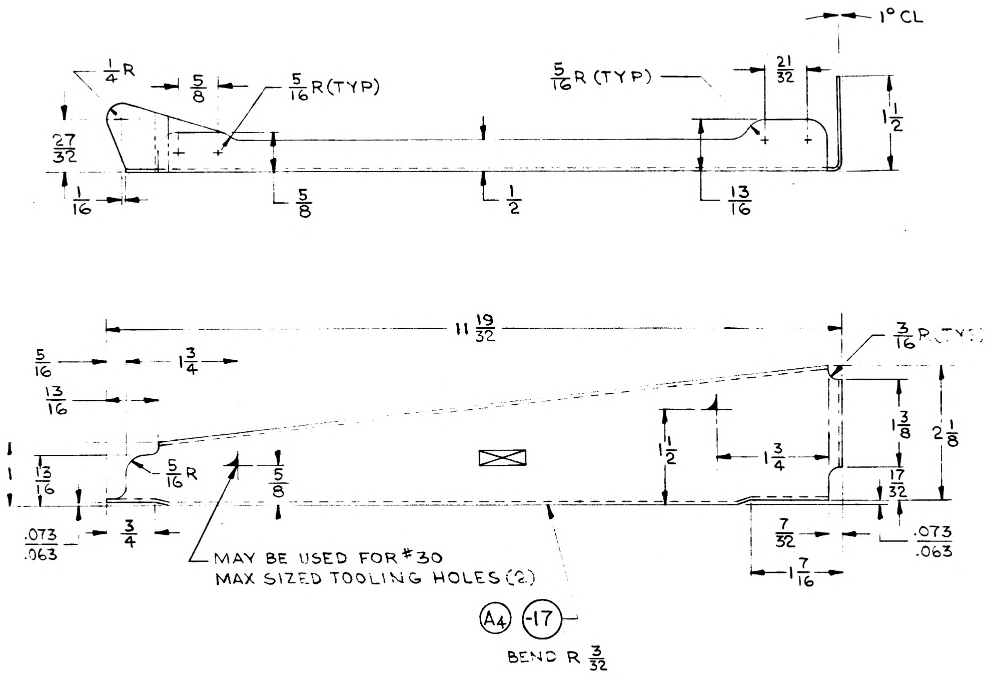
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

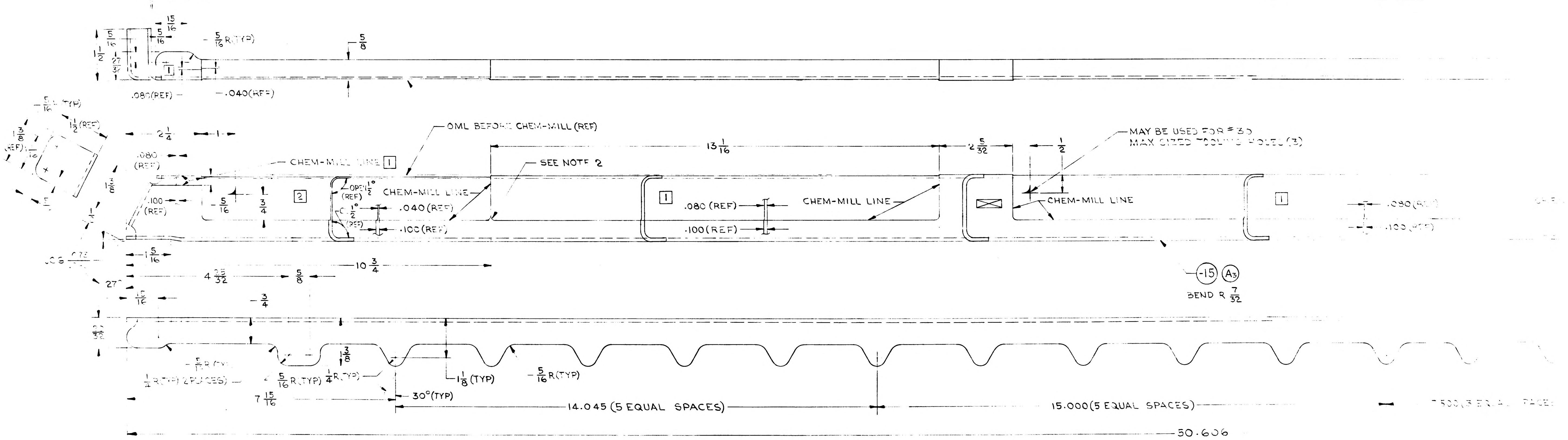


1° CL
$\frac{1}{4}$R
$\frac{5}{8}$
$\frac{5}{16}$R (TYP)
$\frac{21}{32}$
$1\frac{1}{2}$
$\frac{27}{32}$
$\frac{1}{16}$
$\frac{5}{8}$
$\frac{1}{2}$
$\frac{13}{16}$
$11\frac{19}{32}$
$\frac{3}{16}$R (TYP)
$\frac{5}{16}$
$1\frac{3}{4}$
$\frac{13}{16}$
$1\frac{3}{8}$
$2\frac{1}{8}$
$1\frac{1}{2}$
$1\frac{3}{4}$
$\frac{5}{16}$R
$\frac{5}{8}$
$\frac{17}{32}$
$\frac{.073}{.063}$
$\frac{3}{4}$
$\frac{7}{32}$
$1\frac{7}{16}$
MAY BE USED FOR #30 MAX SIZED TOOLING HOLES (2)
A4
-17
BEND R $\frac{3}{32}$

LDW280-10988-15

CHEM-MILL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	.080 $^{+.003}_{-.001}$	.020 (REF)
2	.040 $^{+.003}_{-.001}$	.060 (REF)
☐		



1° OPEN
$\frac{15}{16}$
$\frac{5}{16}$
$\frac{5}{16}$R (TYP)
$\frac{5}{8}$
$1\frac{1}{2}$
$\frac{27}{32}$
.080 (REF)
.040 (REF)
$\frac{5}{16}$R (TYP)
$1\frac{1}{2}$ (REF)
$1\frac{3}{8}$ (REF)
$2\frac{1}{4}$
.080 (REF)
OML BEFORE CHEM-MILL (REF)
CHEM-MILL LINE 1
SEE NOTE 2
$13\frac{1}{16}$
$2\frac{5}{32}$
$\frac{1}{2}$
MAY BE USED FOR #30 MAX SIZED TOOLING HOLES (3)
.100 (REF)
$\frac{5}{16}$
$\frac{3}{4}$
2
OPEN 1° (REF)
$\frac{1}{2}$
CHEM-MILL LINE
.040 (REF)
.100 (REF)
1
.080 (REF)
.100 (REF)
CHEM-MILL LINE
CHEM-MILL LINE
1
.080 (REF)
.100 (REF)
$1\frac{5}{16}$
$4\frac{23}{32}$
$\frac{5}{8}$
$10\frac{3}{4}$
27°
-15
A3
BEND R $\frac{7}{32}$
$\frac{3}{4}$
$\frac{1}{16}$
$\frac{5}{16}$R (TYP)
$\frac{1}{4}$R (TYP) (2 PLACES)
$\frac{5}{16}$R (TYP)
$\frac{1}{4}$R (TYP)
$1\frac{3}{8}$
$1\frac{1}{8}$ (TYP)
$\frac{5}{16}$R (TYP)
30° (TYP)
$7\frac{15}{16}$
14.045 (5 EQUAL SPACES)
15.000 (5 EQUAL SPACES)
7.500 (5 EQUAL SPACES)
50.606

01/02
NAS 9-1100

CODE IDENT NO 26512
LDW280-10988
SH 3

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS EXCEPT AS NOTED.

2. TOL ±.125 AT TANGENCY POINTS OF CHEM-MILL LINE CORNER BETWEEN TWO ETCHED SURFACES

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

DWG SIZE 28 X 70

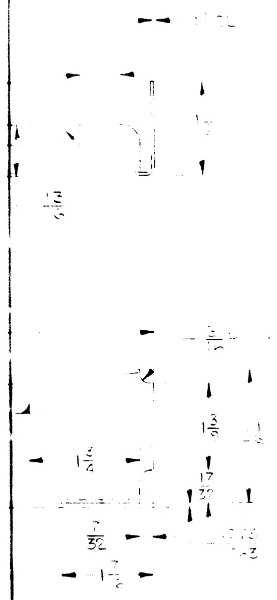
PRINTING INFO ONLY
FULL SIZE SHEET AREA (30 X 72) = 15 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 3.75 SQ. FT.

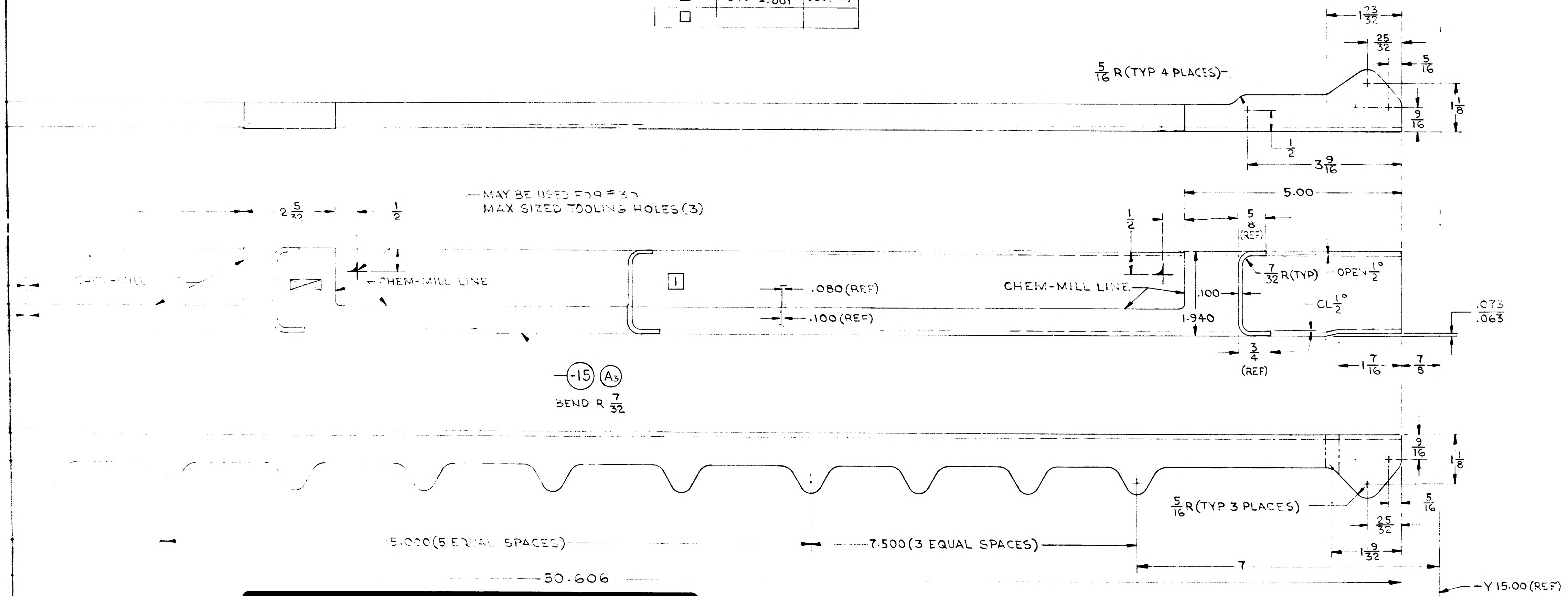
PRINT TRIM LINE

LDW280-10988-15

CHEM-MILL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	.080 +.003 −.001	.020 (REF)
2	.040 +.003 −.001	.060 (REF)
☐		





1 23/32
25/32
5/16
5/16 R (TYP 4 PLACES)
1 1/8
9/16
1/2
3 9/16
5.00
—MAY BE USED FOR #30 MAX SIZED TOOLING HOLES (3)
2 5/32
1/2
1/2
5/8 (REF)
CHEM-MILL LINE
1
.080 (REF)
.100 (REF)
CHEM-MILL LINE
.100
1.940
7/32 R (TYP)
OPEN 1/2°
CL 1/2°
.073
.063
3/4 (REF)
1 7/16
7/8
-15
A3
BEND R 7/32
9/16
1 1/8
5/16 R (TYP 3 PLACES)
5/16
25/32
1 9/32
5.000 (5 EQUAL SPACES)
7.500 (3 EQUAL SPACES)
7
50.606
Y 15.00 (REF)

02/02 NAS 9-1100

CODE IDENT NO 26512	
LDW280-10988	SH 3

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	H	26512	LDW280-10988	
	SCALE FULL			SHEET 3.0

LDW280-10988

LDW280-10988

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10989-17	E	BEAM	AL ALLOY CLAD SH	QQ-A-250/13		.063×5 1/4×18 5/8	T6	88	5E
		LDW280-10989-15	E	BEAM	AL ALLOY CLAD SH	QQ-A-250/13		.063×5 1/4× 19	T6	88	5A

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14.9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10989	A

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

LDW280-10989 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53159	QUAL TEST (70)	1 EA
↑	↑	PA-1(47)	1 EA
│	│	LM-15(45)	1 EA
│	↓	THRU	
│	LDW280 53159	LM-3(33)	1 EA
│	LDW280-28159	QUAL TEST (70)	1 EA
│	LDW280-28159	LM 2(32)	1 EA
↓	LDW280-28159	LM 1(31)	1 EA
LM	LDW280-28159	LTA-8 (18)	1 EA

PART NO. LDW280-10989-15 &-17
GAEC SCH NO. 30 SH-2

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH				
SHEET	1.00	1.10	2.00	3.00
REV	B	B	A	B
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED
LAST DASH NO. USED -17
GRUMMAN REL INFO B
PRIM NO. 215
JK(001) ME-66-12/9/18

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ± .020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	KORYKORA
LAYOUT BY	KORYKORA
CHECKED BY	J.R.T
GP LEADER	P.HENTON 4-15-66
VEH DES INT	PAULSRUD 4-15-66
STRUCTURES	F.BUNCE 4-16-66
STRUCTURES	HILDERMAN 4-16-66
WEIGHTS	D.ROBESCH 4-18-66
PROJ ENGR	J.ALBER 4-19-66
REL GROUP	A.CARAMANICIA 4-20-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BEAM ± Z 10.25-ASCENT STAGE
MID SECTION-THERMAL SHIELD

SIZE B
CODE IDENT NO. 26512
LDW280-10989 B
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-10989 N/C 4-15-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED NO CHANGE, LAST REVISION NO CHANGE SH 1 OF 4 WAS SH 1 OF 1, ADDED SH 1.10, 2.00 & 3.00. A. RIHA 8-11-66						
A	1	1.00, 1.10 2.00 & 3.00	5A 5E					EOA1	CREATED -15 & -17, DELETED -11 & -13	LTA-8, LEM-1 THRU LEM-6		-11 & -13	A. RIHA 8-11-66		
	2	1.00, 1.10		DCRF 323-1078				Ⓡ	-15 & -17 REMOVED EFF LEM 3 THRU LEM 6 Ⓐ e/l	LTA-8, LEM 1 & 2		✓	J.B.		
B	1	1.00					✓	LE0280-327	-15 & -17 ADDED QUAL TEST EFF.	QUAL TEST	NOT	REQ'D	R. J. PRIZZI 12-4-68		
	2	3.00	6D					EO B2	IN FLD REVISED FLANGE TRIM OF -15.	LTA8, LM-1 & 2	✓				
	3	1.00					✓	LE0280-375	ADDED LM-3 (33) THRU LM-15 (45) TO -15 & -17	LM-3 THRU LM-15	NOT	REQ'D			
	4	1.00				✓		LE0280-506 LCD 1124	ADDED PA-1 (47) REQ TO -15 & -17	PA-1 (47)	NOT	REQ'D			
	5	1.00					✓	LE0280-737	FOR -15 & -17 ADDED QUAL TEST REQ	QUALTEST (70)	NOT	REQ'D		L.D.	
	6							Ⓡ	REF EO B2: EFF LTA-8, LM-1, LM-2 & QUAL TEST WAS LTA-8 LM-1 & LM-2	LTA-8 LM-1 LM-2 QUAL TEST	✓			F. Zulas 12-5-67	

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRESS	STRESS	WEIGHTS						
A			Feb 8/30								
B											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10989	B

SCALE NONE SHEET 1.10

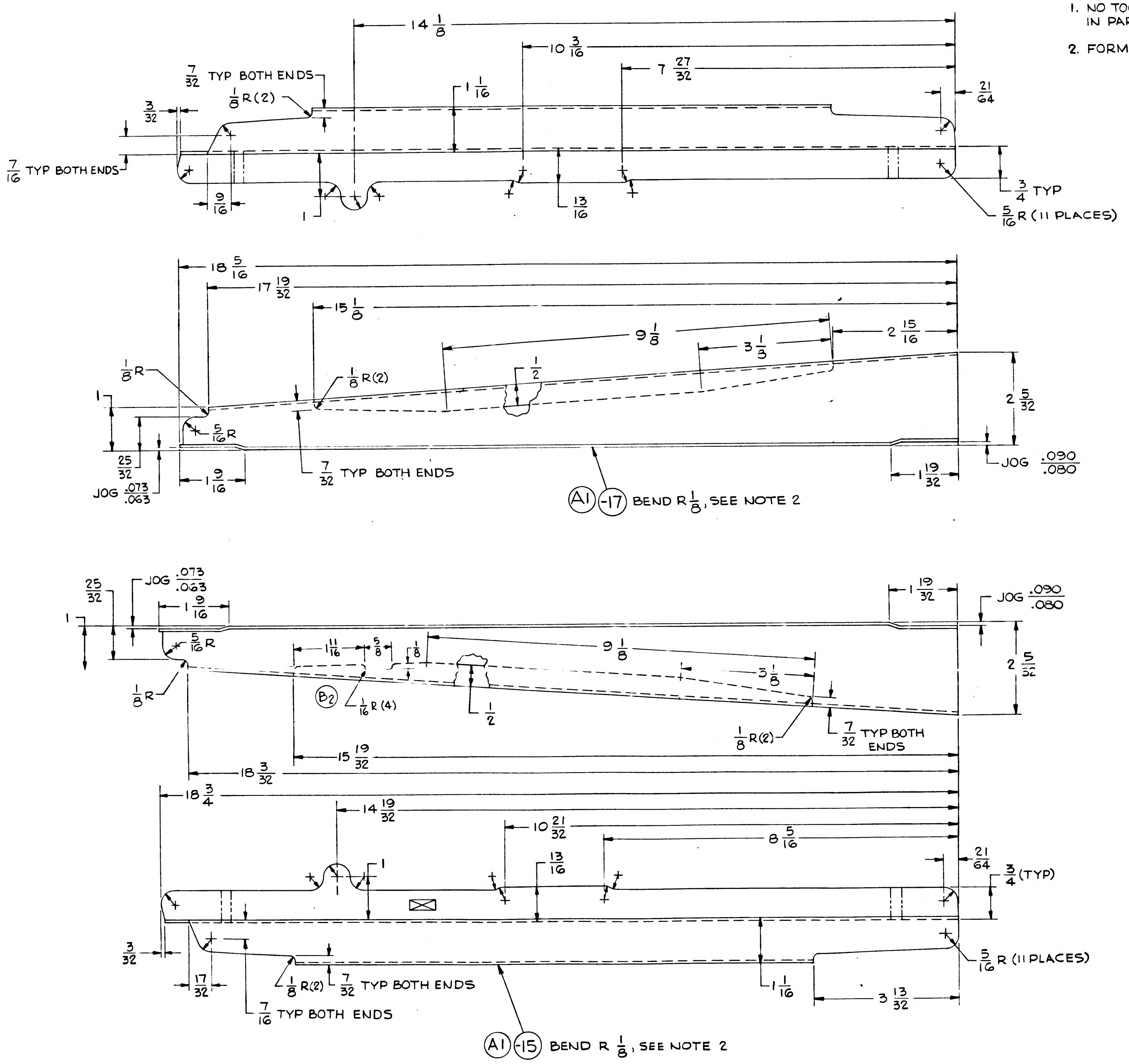
ENG 77.16 3-66

01

NAS 9-1100

NOTES;

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. FORM PER SPEC LSP-14-5300



14 1/8
10 3/16
7 27/32
7/32 TYP BOTH ENDS
1/8 R(2)
1 1/16
21/64
3/32
7/16 TYP BOTH ENDS
9/16
1
13/16
3/4 TYP
5/16 R (11 PLACES)
18 5/16
17 19/32
15 1/8
9 1/8
3 1/3
2 15/16
1/2
1/8 R
1/8 R(2)
5/16 R
2 5/32
1
25/32
JOG .073/.063
1 9/16
7/32 TYP BOTH ENDS
1 19/32
JOG .090/.080
A1 -17 BEND R 1/8, SEE NOTE 2
25/32
JOG .073/.063
1 9/16
1 19/32
JOG .090/.080
1
5/16 R
1 11/16
5/8
1/8
9 1/8
3 1/8
2 5/32
1/8 R
B2
1/16 R (4)
1/2
1/8 R(2)
7/32 TYP BOTH ENDS
15 19/32
18 3/32
18 3/4
14 19/32
10 21/32
8 5/16
21/64
3/4 (TYP)
1
13/16
3/32
17/32
1/8 R(2)
7/32 TYP BOTH ENDS
7/16 TYP BOTH ENDS
1 1/16
3 13/32
5/16 R (11 PLACES)
A1 -15 BEND R 1/8, SEE NOTE 2

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

LDW280-10989B

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK		
LEM	SIZE F	CODE IDENT NO. 26512	LDW280-10989
MODEL OR END ITEM	SCALE FULL		SHEET 3.0

ENG 735 6-64

01

NAS 9-1100

								LEM	LDW280-28159	LEM-2(32)	1 EA
								LEM	LDW280-28159	LEM-1(31)	1 EA
								LEM	LDW280-28159	LTA-8(18)	1 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW280-10990-15,-17,-23,&-25		GAEC SCH NO. 30	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO B		
		PRIM NO.	LE(001)	
LAST DASH NO. USED	-25	215	MP-B	8-31-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY			
LAYOUT BY	J.CALIGIURI 5/16/66		
CHECKED BY	JG		
GR. LDR	P.HENTON 4/16		
VEH DES INT	W.BISCHOFF		
STRUCTURES	F.BUNCE 4/16	PROJ ENGR	J.ALBER RVC 4/19
STRUCTURES	R.HILDERMAN 4/16	REL GROUP	BOTTI 5/11/66
WEIGHTS	D.ROBESCH 4/19		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ZEE
ASCENT STAGE-MID-SECT-LOWER
THERMAL SHIELD-LH

SIZE	CODE IDENT NO.		
B	26512	LDW280-10990	B
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 9-64

SUPERSEDES LDW280-10990 REV A 5-11-66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
	RETRACED NO CHG-LAST REV "A"-ADDED SHS. 1.10, 2.00, & 3.00.-SH 1.00 OF 4 WAS SH 1 OF 1										L.BRIDA		8-12-66		
B	1	1.00, 1.10, 2.00 & 3.00						EOBI	DELETED -19 & -21. CREATED -23 & -25	LTA-8, LEM-1 THRU LEM-6		-19 & -21	L.BRIDA 8-12-66	☒	
	2	1.00 & 1.10		DCRF323-1078				®	EFF FOR -15, -17, -23 & -25 WAS LTA-8, LEM-1 THRU LEM-6	NOTED		✓			

CHG APPROVED	LTR	GROUP LDR								

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280 10990	B
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10990-25	E	ZEE	AL ALLOY SH	QQ-A-250/13	7075 ALCLAD	.063 x 4¼ x 29½	T6	88	
								↕ -23	E	↕	↕	↕	↕	.071 x 4¼ x 14¾	T6	88	
								↕ -17	E	↕	↕	↕	↕	.063 x 3¾ x 16¾	T6	88	
								LDW280-10990-15	E	ZEE	AL ALLOY SH	QQ-A-250/13	7075 ALCLAD	.071 x 3¾ x 34⅛	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	AL HEAT TREAT	MIL-H-6088
88	ANODIZE	LSP14-9030

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

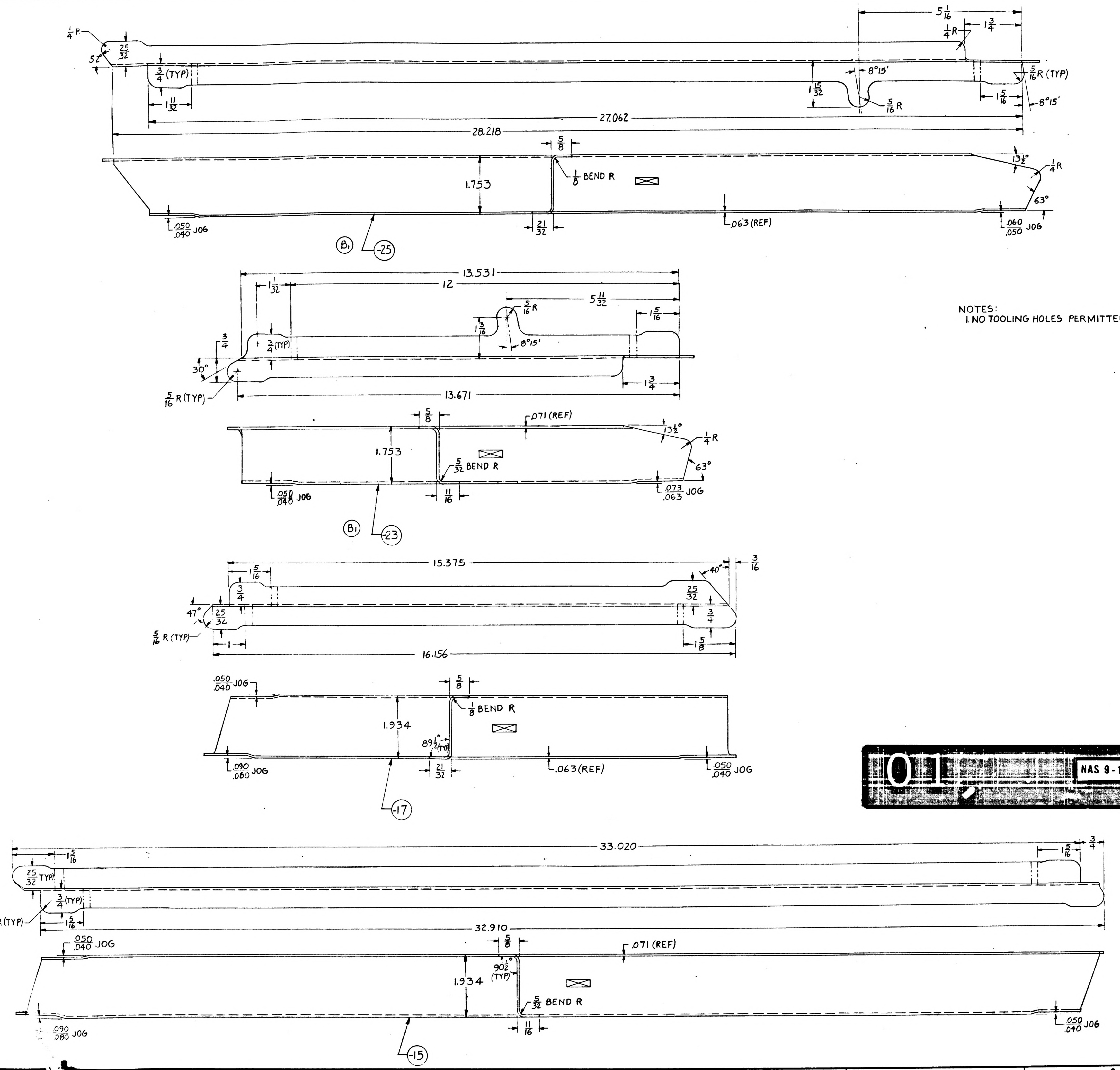
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10990	B
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



1/4 R
52°
25/32
3/4 (TYP)
1 11/32
1/4 R
1 3/4
5 1/16
8°15'
1 15/32
5/16 R
5/16 R (TYP)
1 5/16
8°15'
27.062
28.218
5/8
13 1/2°
1/4 R
1.753
1/8 BEND R
63°
.050/.040 JOG
21/32
.063 (REF)
.060/.050 JOG
B1
-25
13.531
1 1/32
12
5/16 R
5 11/32
1 5/16
3/4
3/4 (TYP)
1 3/8
8°15'
30°
5/16 R (TYP)
13.671
1 3/4
5/8
.071 (REF)
13 1/2°
1/4 R
1.753
5/32 BEND R
63°
.050/.040 JOG
11/16
.073/.063 JOG
B1
-23
15.375
1 5/16
3/4
40°
3/16
25/32
47°
25/32
3/4
5/16 R (TYP)
1
1 5/8
16.156
.050/.040 JOG
5/8
1/8 BEND R
1.934
89 1/2° (TYP)
.090/.080 JOG
21/32
.063 (REF)
.050/.040 JOG
-17
33.020
1 5/16
1 5/16
3/4
25/32 TYP
3/4 (TYP)
5/16 R (TYP)
1 5/16
32.910
.050/.040 JOG
5/8
.071 (REF)
1.934
90 1/2° (TYP)
5/32 BEND R
.090/.080 JOG
11/16
.050/.040 JOG
-15

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.

01 NAS 9-1100

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN. NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

LEM	SIZE E	CODE IDENT NO. 26512	LDW280-10990	B
MODEL OR END ITEM	SCALE FULL		SHEET 3 [illegible]	

LDW280-10990 B

LDW280-10990 B

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO.
EO NO.
CONTROL INFO NO.

DWG. NO.	DASH NO. *	TITLE	CHANGE NO.	NEXT ASSEMBLY (PER MODULE)	REQUIREMENTS	NUMBER REQD.
LDW280-10[illegible] ✓	-15	SEE DWG.	B1	LDW280-28159	ADD QUAL. TEST TO EFF.	1
LDW280-10898 ✓	-15		B1			
	-17					
LDW280-10985 ✓	-15		B1			
	-17					
LDW280-10986 ✓	-15		B2			
	-17					
LDW280-10987 ✓	-11		B2			
	-13					
	-15					
	-17					
	-19					
LDW280-10989 ✓	-15		B1			
	-17					
LDW280-10990 ✓	-15		C1			
	-17					
	-23					
	-25					
LDW280-10991	-17		C3			
	-23					
	-25					
	-27					
	-29					
	-30					
LDW280-10992	-13		C2			
	-15					
	-17					
	-21					
LDW280-10993	-15		C1			
	-17					
	-19					
	-21					
	-23					
LDW280-10994	-16		B3			
	-17					
LDW280-10995	-17		B1			
LDW280-10996	-13		B1			
LDW280-10997	-11		B1			
LDW280-11000	-15 -17 -19 -21		B1			
LDW280-11001			B1			
	-13					1
LDW280-11002	-11		B1			5
	-13					5
	-15					5
LDW280-11003	-17		B1			6
	-19					6
	-21					6
	-23					
LDW280-11007	-11		B1			1
	-13					
LDW280-11012	-11		C1			
	-15					
	-17					
	-19	SEE DWG.		LDW280-28159	ADD QUAL. TEST TO EFF.	

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO | DESCRIPTION OF EO | GAEC EO RELEASE

MODEL | EFFECTIVITY: PROCURING ACTIVITY NO. | GAEC UNIT NO. | SUB CONTR UNIT NO. | DRAWING CHANGE REQD: REVISE DWG, RECORD EO | DISPOSITION OF PARTS: REWORK, SCRAP | APPROVED BY | DATE | SUPPORT | RELIAB GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG | GOVT

PRIORITY | DRAWING TITLE | DRAWING NO. | EO NO.

ISSUED BY______ SECTION______

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

EO. NO. LE0280
EO NO. 327
CONTROL INFO NO. LDW280A0538

DWG. NO.	DASH NO. *	TITLE	CHANGE NO.	NEXT ASSEMBLY	REQUIREMENTS	NUMBER REQD.
LDW280-11194	-11	SEE DWG.	B2	LDW280-28159	ADD QUAL. TEST TO EFF.	1
LDW280-11331	-11		A1	LDW280 —28378		
	-13			—28378		
LDW280-28378	-1		A1	LDW280-28159		1
LDW280M10604	-1		B4	-28159		2
	-7			-28162		2
LDW280M10605	-1		B2	-28159		1
LDW280M10606	-3-1		B3	-28159		
LDW280M10609	-5		B3	-28159		
LDW280M10610	-5		C4	-28159		
LDW280M10869	-3		B4	LDW280-28159		
	-4			-28159		
LDW280M10902	-1		A1	-28150		
LDW280M10905	-1		A2	-28159		
LDW280M10952	-3		B1	-28159		
LDW280M10955	-1		A1			
LDW280M10956	-1		A1			
LDW280M10969	-1		B2			
LDW280M10977	-1		A2	-28159		
LDW280M10940	-1		B2	-28153		
LDW280M10975	-1		A2	-28153 -51153		
LDW280-11004	-11		B1	-28159		4
	-13					4
	-15					4
LDW280-11006	-15		B1			1
	-13	SEE DWG.		LDW280-28159	ADD QUAL TEST TO EFF.	1
	-17					1
	-19					1
	-21					1
	-23					1

FOR THE PRECEEDING DRAWINGS: ADD QUALIFICATION TEST EFFECTIVITY FOR DASH NO'S * NOTED.

DETAIL SPEC REQ | CL II ENGRG CHG ✓ | CL I ENGRG CHG

REASON FOR EO: TO ADD QUALIFICATION TEST

DESCRIPTION OF EO: FOR -* ADDED QUALIFICATION TEST EFFECTIVITY

GAEC EO RELEASE: 10/24

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LN		NOTED	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK SCRAP — NOT REQ'D

APPROVED BY — DATE: 10-10-66 | 10/11 | GROUP LEADER 10/11 | STRESS GROUP 10/11 | PROJ ENGRG 10-... | GOVT 10/12/66

PRIORITY: C

DRAWING TITLE: SEE DWG.

DRAWING NO.: LE0280

EO NO.: 327

ISSUED BY [illegible] SECTION VEH. DES. INT GROUP NO. 335 PL 35 EMP

NAS 9-1100

LDW280-10991 C

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28159	QUALTEST(70)	1EA
	LDW280-53159	QUALTEST(70)	1EA
		PA-1(47)	1EA
		LM-15(45)	1EA
		LM-14(44)	1EA
		LM-13(43)	1EA
		LM-12(42)	1EA
		LM-11(41)	1EA
		LM-10(40)	1EA
		LM-9(39)	1EA
		LM-8(38)	1EA
		LM-7(37)	1EA
		LM-6(36)	1EA
		LM-5(35)	1EA
		LM-4(34)	1EA
	LDW280-53159	LM-3(33)	1EA
	LDW280-28159	LM-2(32)	1EA
	LDW280-28159	LM-1(31)	1EA
LM	LDW280-28159	LTA-8(18)	1EA
PART NO. LDW280-10991-27,-29,-30		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28159	QUALTEST(70)	1 EA
LM	LDW280-28159	LEM-2 (32)	1 EA
LM	LDW280-28159	LEM-1 (31)	1 EA
LM	LDW280-28159	LTA-8(18)	1 EA
PART NO. LDW280-10991-23,-25,-31		GAEC SCH NO. 30-	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	C	C	C	C
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -31

GRUMMAN REL INFO C

PRIM NO. 215 JK(001) ME-160 12/12/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ± .020 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	KORNELY	
LAYOUT BY	PFORTSCH	
CHECKED BY	JG (A)	
GR. LEADER	P. HENTON	4/16
VEH DES INT	W. BISCHOFF PH	
STRUCTURE	JV. FEB AJP	4/15
STRUCTURE	HILDERMAN	4/16
WEIGHTS	D. ROBESCH	4/19
PROJ ENGR	J. ALBER/RC	4/19
REL GROUP	A. CARAMANICA	4/21

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CAPSTRIP
ASCENT STAGE - MID SECTION
LOWER THERMAL SHIELD

SIZE B
CODE IDENT NO. 26512
LDW280-10991 C
SCALE NONE
SHEET 1.00 OF 4

77.1 12-65

THIS DWG SUPERSEDES LDW280-10991 REV. A 4-19-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE - LAST REV. "A" CHANGE. ADDED SH 1.10, 2.00 & 3.00 SH 1 OF 4 WAS SH 1 OF 1. LOFTED DWG WAS DIMENSIONED. H. DEUTSCH 7-27-66						
B	1	1.00, 1.10 2.00 3.00						EO B1	IN FLD, B/M & MOD. BLK. DELETE -15, CREATE -21	NOTED		-15	H. DEUTSCH 8-9-66		
	2	1.00, 1.10 3.00		DCRF 323-1078					REMOVED -13 & -21. ADDED -23 & -25 IN MODEL BLOCK REMOVED LEM-3, 4, 5 & 6 EFFECTIVITY	NOTED		-13 -21			
	3	1.00 1.10 2.00, 3.00						Ⓑ	REMOVED -19 ADDED -27, -29, & -30	NOTED		-19	R.R.		
C	1	3.00					✓	EOC1	REVISED OUTLINE OF -17	LM-1, LM-2 LTA-8	✓		G. DUMITRESKU 12-10-68		
	2	1.00, 2.00 3.00					✓	EOC2	REMOVED -17, ADDED -31			-17			
	3	1.00					✓	LEO280-327	FOR -17, -23, -25, -27, -29, -30 ADDED QUALIFICATION TEST EFFECTIVITY	QUAL TEST	NOT	REQD			
	4	1.00					✓	LEO280-375	FOR -27, -29, -30 ADDED LM-3(33) THRU LM-15(45) EFF	LM-3 THRU LM-15	NOT	REQD			
	5	1.00					✓	LEO-280-506 LCD-1124	ADDED PA-1(47) REQ'TS TO -27, -29, -30	PA-1(47)	NOT	REQD			
	6	1.00					✓	LEO280-737 LCD-2104	FOR -27, -29, -31 ADDED QUAL TEST REQUIREMENTS	QUALTEST(10)	NOT	REQD	H.D.		
	7	1.10					✓	Ⓒ	REF LEO 280-327 (C3 CHANGE) -17 SHOULD BE -31					T.S.	

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10991	C
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10991-30	E	CLIP	AL ALLOY SH	QQ-A-250/13	ALCLAD 7075	.050 X 2 X 3 1/4	T6	88	
		-29		CLIP				.050 X 2 X 3 1/4			
		-27		CAPSTRIP				.020 X 2 X 6 5/8			
		-25						.020 X 2 5/8 X 16 1/4			
		-23						.063 X 2 7/8 X 11 7/8			
		LDW280-10991-31	E	CAPSTRIP	AL ALLOY SH	QQ-A-250/13	ALCLAD 7075	.063 X 2 1/8 X 5	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP 14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

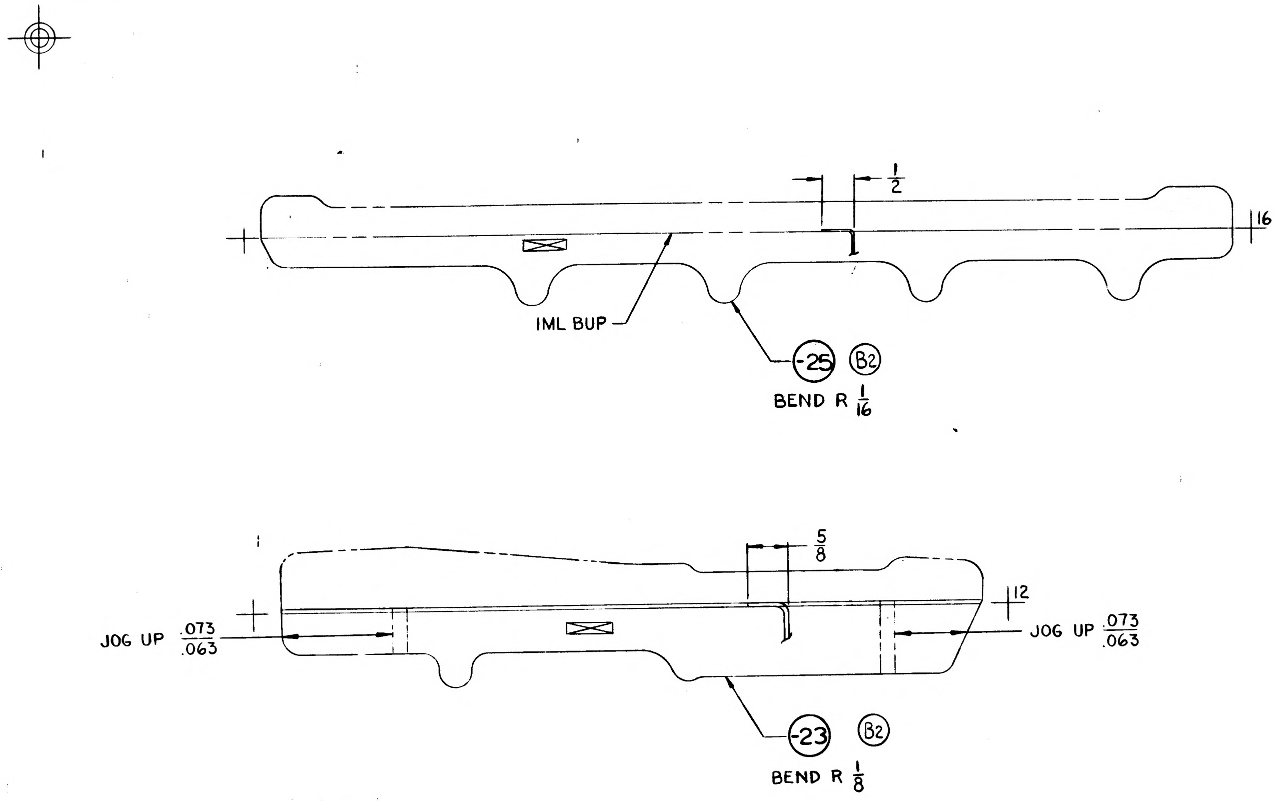
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10991	C
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

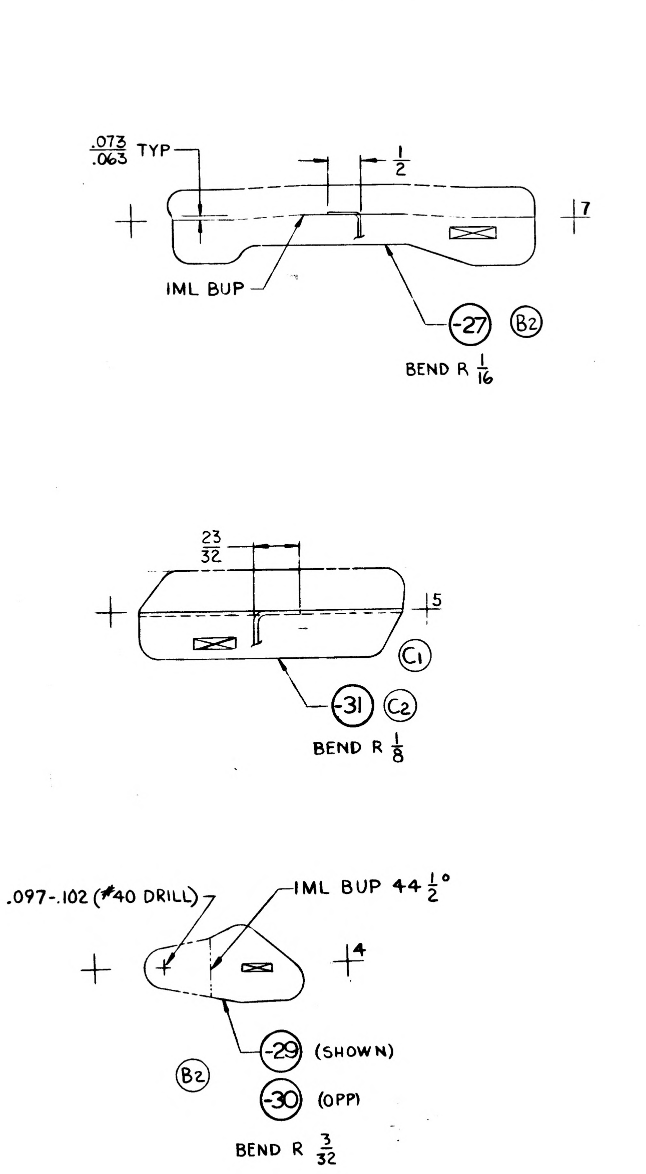
01

NAS 9-1100



1/2
16
IML BUP
-25 B2
BEND R 1/16
5/8
12
JOG UP .073/.063
JOG UP .073/.063
-23 B2
BEND R 1/8

NOTE :
1. NO TOOLING HOLES PERMITTED IN PARTS.



.073/.063 TYP
1/2
7
IML BUP
-27 B2
BEND R 1/16
23/32
5
C1
-31 C2
BEND R 1/8
.097-.102 (#40 DRILL)
IML BUP 44 1/2°
4
-29 (SHOWN)
B2
-30 (OPP)
BEND R 3/32

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

01 NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE F	CODE IDENT NO. 26512	LDW280-10991	C
MODEL OR END ITEM	SCALE FULL		SHEET 3 00	

FOR PHOTO REPRODUCTION

LDW280-10992 C

PART NO. LDW280-10992-23

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53159	PA-1 (47)	1
LM	↑	QUALTEST(70)	1
LM		LM-15(45	1
LM	↓	THRU	1
LM	LDW280-53159	LM-3 (33)	1

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53159	PA-1 (47)	1
LM	↑	QUAL TEST (70)	1
LM		LM-15 (45)	1
LM	↓	THRU	1
LM	LDW280-53159	LM-3 (33)	1
LM	LDW280-28159	QUAL TEST (70)	1
LM	↑	LM-2 (32)	1
LM	↓	LM-1 (31)	1
LM	LDW280-28159	LTA-8 (18)	1
PART NO. LDW280-10992-21		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28159	QUAL TEST (70)	1
LM	↑	LM-2 (32)	1
LM	↓	LM-1 (31	1
LM	LDW280-28159	LTA-8 (18)	1
PART NO. LDW280-10992-15		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28159	QUALTEST(70)	1 EA
LM	LDW280-28159	LM-2(32)	1 EA
LM	LDW280-28159	LM-1(31)	1 EA
LM	LDW280-28159	LTA-8(18)	1 EA
PART NO. LDW280-10992-13, & -17		GAEC SCH NO. 30-	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	C	C	C	C					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO C		
LAST DASH NO. USED	-23	PRIM NO. 215	LE(001) MP-1	C-9/29

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.030 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 | LINE ITEM 1 | DOCUMENTATION TYPE II

DRAWN BY	KORNELY		
LAYOUT BY	PFORTSCH		
CHECKED BY			
GR LEADER	P. HENTON 4/16/66		
VEH DSGN INT	W. BISCHOFF 4/16/66		
STRUCTURES	J.V. F.B 4/16/66	PROJ ENGR	J. ALBER W.C. 4/19/66
STRUCTURES	R. HILDERMAN 4/16/66	REL GROUP	A. CARAMANICA 4/21/66
WEIGHTS	D. ROBESCH 4/19/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CAPSTRIP
ASCENT STAGE-MID SECT.
LOWER THERMAL SHIELD

SIZE B | CODE IDENT NO. 26512 | LDW280-10992 | C
SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-10992 REV A 4-21-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED NO CHG-LAST REV A A. MONTEMAGNO 8-8-66						
									ADDED SH 1.10 - SH 1.00 OF 4 WAS SH 1.00 OF 3.						
B	1			DCRF 323-1078					REVISED EFF OF -13,-15,-17 & -19 FROM LTA-8, LEM-1 THRU LEM-6 TO LTA-8, LEM-1 & LEM-2	NOTED		✓	MONTEMAGNO 8-9-66		
	2								DELETED -19 & REPLACED WITH -21	LTA-8, LEM-1 & LEM-2		-19			
C	1	1.10, 3.00	4F				✓	EO C1	REVISED -17, JOG LENGTH 1 1/32 WAS 1.650, 1 REF. WAS 1.500, ADDED 2 1/32	LTA-8, LM-1, LM-2	✓		F. RODGERS 9-12-68		
	2	1.00, 1.10					✓	LEO280-327	FOR -13, -15, -17, -21 ADDED QUALIFICATION TEST EFF.	QUAL. TEST	NOT	REQD			
	3	1.00 1.10					✓	LEO280-375	FOR -15 & -21 ADDED LM-3 (33) THRU LM-15 EFF	LM-3 THRU LM-15	NOT	REQD			
	4	1.00, 1.10 2.00 3.00	4C 4D					EO C4	ON -15 REMOVED LM-3 THRU LM-15 REQMNTS N/A LDW 280-28159; ADDED -23 EFF LM-3 THRU LM-15 N/A LDW 280-53159.	LM-3 THRU LM-15		-15			
	5	1.00, 1.10					✓	LEO280-506 LCD 1124	ADDED PA-1 (47) REQMTS TO -21 & -23, N/A LDW 280-53159	PA-1	NOT	REQD			
	6	1.00, 1.10					✓	LEO280-737 LCD 2104	FOR -21 & -23 ADDED QUAL. TEST REQUIREMENTS	QUAL. TEST	NOT	REQD	E.C.G.		

CHG APPROVED

LTR	GROUP LDR	VEH DSGN INT	STRUCTURES	STRUCTURES	WEIGHTS
B					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10992	C

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10992-23	E	CAPSTRIP	AL ALY SH	QQ-A-250/12	7075	.020×3×23	T6	88	5C
		-21						.024X2¼X20½	T6	88	5G
		-17						.040X5½X23½	T6,CM	88	5E
		-15						.020X2¼X21⅜	T6	88	5C
		LDW280-10992-13	E	CAPSTRIP	AL ALY SH	QQ-A-250/12	7075	.036X5¼X15¼	T6,CM	88	6B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T6	AL HEAT TREAT	MIL-H-6088
						CM	CHEM-MILL	LSP14-26100

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10992	C

SCALE NONE

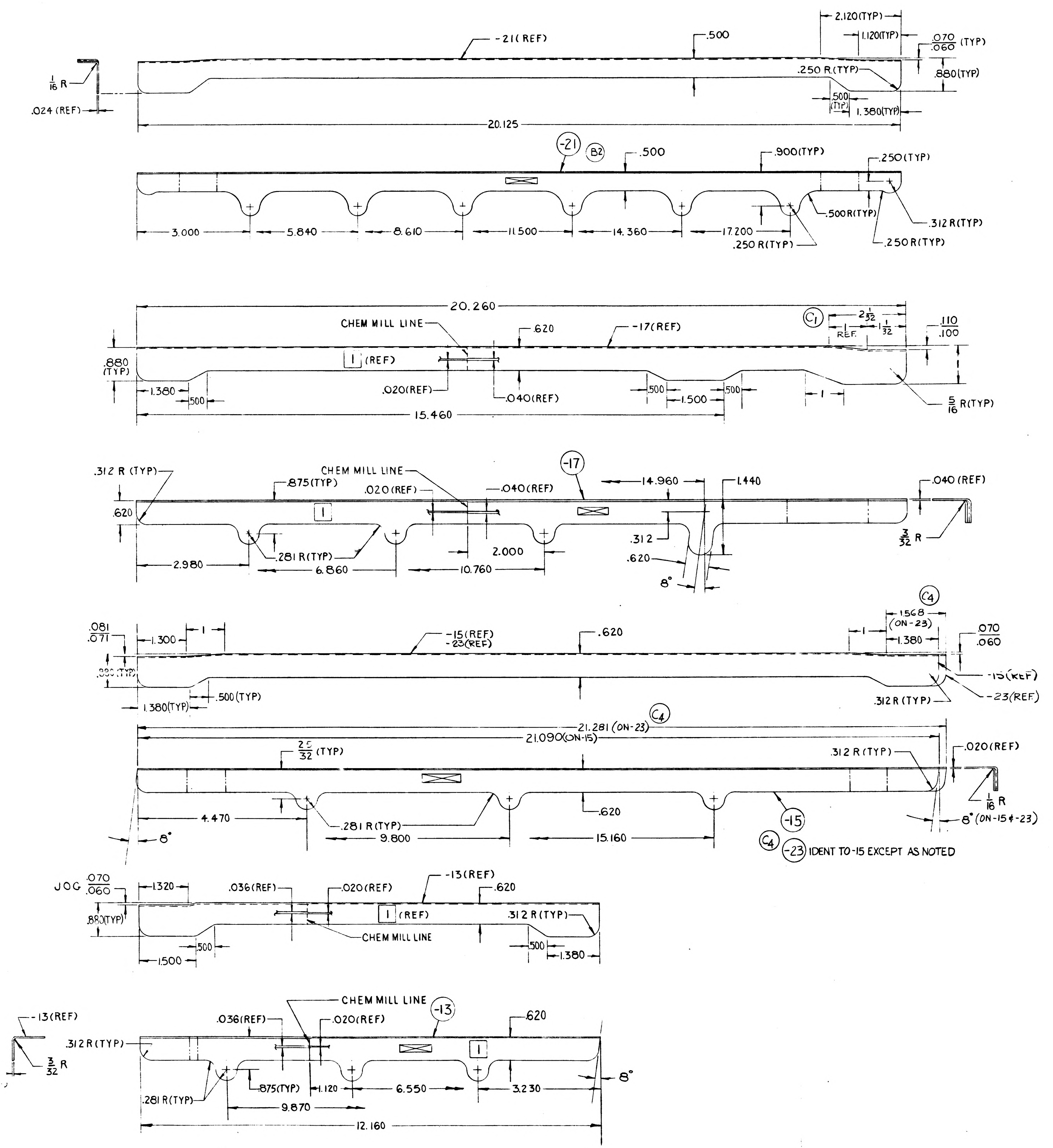
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.



-21 (REF)
.500
2.120 (TYP)
1.120 (TYP)
.070
.060 (TYP)
1/16 R
.250 R (TYP)
.880 (TYP)
.024 (REF)
.500 (TYP)
1.380 (TYP)
20.125
-21
B2
.500
.900 (TYP)
.250 (TYP)
.500 R (TYP)
.312 R (TYP)
3.000
5.840
8.610
11.500
14.360
17.200
.250 R (TYP)
.250 R (TYP)
20.260
CHEM MILL LINE
.620
-17 (REF)
C1
2 1/32
REF.
1/32
.110
.100
.880 (TYP)
1 (REF)
.020 (REF)
.040 (REF)
1.380
.500
.500
1.500
.500
1
5/16 R (TYP)
15.460
.312 R (TYP)
CHEM MILL LINE
-17
.875 (TYP)
.020 (REF)
.040 (REF)
14.960
1.440
.040 (REF)
.620
1
.312
.620
8°
3/32 R
.281 R (TYP)
2.000
2.980
6.860
10.760
.081
.071
1.300
1
-15 (REF)
-23 (REF)
.620
C4
1.568 (ON-23)
1.380
.070
.060
.880 (TYP)
.500 (TYP)
1.380 (TYP)
.312 R (TYP)
-15 (REF)
-23 (REF)
21.281 (ON-23)
C4
21.090 (ON-15)
25/32 (TYP)
.312 R (TYP)
.020 (REF)
4.470
.281 R (TYP)
9.800
.620
15.160
-15
1/16 R
8° (ON-15 & -23)
8°
C4
-23 IDENT TO -15 EXCEPT AS NOTED
JOG .070
.060
1.320
.036 (REF)
.020 (REF)
-13 (REF)
.620
.880 (TYP)
1 (REF)
.312 R (TYP)
CHEM MILL LINE
.500
1.500
.500
1.380
CHEM MILL LINE
-13
-13 (REF)
.036 (REF)
.020 (REF)
.620
.312 R (TYP)
3/32 R
1
.281 R (TYP)
.875 (TYP)
1.120
6.550
3.230
8°
9.870
12.160

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

LDW280-10992-13

CHEM-MILL LINE TOLERANCE:
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	$.020^{+.003}_{-.001}$	.016 (REF)

LDW280-10992-17

CHEM-MILL LINE TOLERANCE:
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	$.020^{+.003}_{-.001}$	.020 (REF)

01

NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
LEM	SIZE E	CODE IDENT NO. 26512	LDW280-10992	
MODEL OR END ITEM	SCALE FULL		SHEET	

LDW280-10993 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	LEM-2(32)	3
LEM	LDW280-28159	LEM-1(31)	3
LEM	LDW280-28159	LTA-8(18)	3
PART NO. LDW280-10993-23		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	LEM-2(32)	1
LEM	LDW280-28159	LEM-1(31)	1
LEM	LDW280-28159	LTA-8(18)	1
PART NO. LDW280-10993-15,-17,-19,-21		GAEC SCH NO. 30	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	B	B	B	B
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -23

GRUMMAN REL INFO B

PRIM NO.	LE(001)	
215	MP-B	8-11-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES

±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM #1

DOCUMENTATION TYPE II

DRAWN BY	FEINER 4-18-66		
LAYOUT BY			
CHECKED BY CB			
GR LDR	P. HENTON ACP 4-18		
VEH DES INT	BISCHOFF 9-13		
STRUCTURES	JY AJP FEB 4-16	PROJ ENGR	J. ALBER 4-19
STRUCTURES	HILDERMAN 4-18	REL GROUP	A CARAMANICA 4-21
WEIGHTS	D ROBESCH 4-19		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CAP STRIP
ASCENT STAGE-MID SECT-LOWER THERMAL
SHIELD-AFT OUTBOARD - LH

SIZE B
CODE IDENT NO. 26512
LDW280-10993 B
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-10993 "A" 7-26-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
RETRACED NO CHG LAST REV A. SH 1 OF 4 WAS 1 OF 1. ADDED SH. 1.10, 2.00, & 3.00.													L.BRIDA 7-25-66		
B	1	1.00, 1.10		DCRF 323-1078					RESTRICTED -15, -17, -19, -21, & -23 EFF. WAS LTA-8, LEM-1 THRU LEM-6.	NOTED		✓	L.BRIDA 7-25-66		
	2	3.00						(R)	IN FIELD FOR -21 REVISED LEFT END OF LOWER VIEW TO AGREE WITH UPPER VIEW. ON -21 ADDED 1/4 R (TYP), 1/2 R (TYP), 5/8 DIM & REMOVED 22° FROM FACE OF UPPER VIEW. REVISED LOWER VIEW OF -15 TO AGREE WITH UPPER VIEW. ON -19 REMOVED 22° FROM FACE OF UPPER VIEW.	NOT REQD	NOT REQD		W.M.		

FOR CONTINUATION OF REVISIONS SEE SHEET

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10993	B
SCALE NONE		SHEET 1.10	

ENG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10993-23	E	STIFFENER	AL ALLOY SH	QQ-A-250/13	ALCLAD 7075	.024 x 1 1/4 x 5 3/8	T6	88	
								-21	↕	CAP STRIP	↕	↕	↕	.032 x 2 5/8 x 14 1/2	T6	↕	
								-19	↕	↕	↕	↕	↕	.056 x 5 1/8 x 18 3/8	T6&CM	↕	
								-17	↕	↕	↕	↕	↕	.024 x 1 3/4 x 6 1/2	T6	↕	
								LDW280-10993-15	E	CAP STRIP	AL ALLOY SH	QQ-A-250/13	ALCLAD 7075	.024 x 2 3/8 x 10 1/2	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP 14-9030
						CM	CHEM-MILL	LSP 14-2600

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10993	B

SCALE NONE

SHEET 2.00

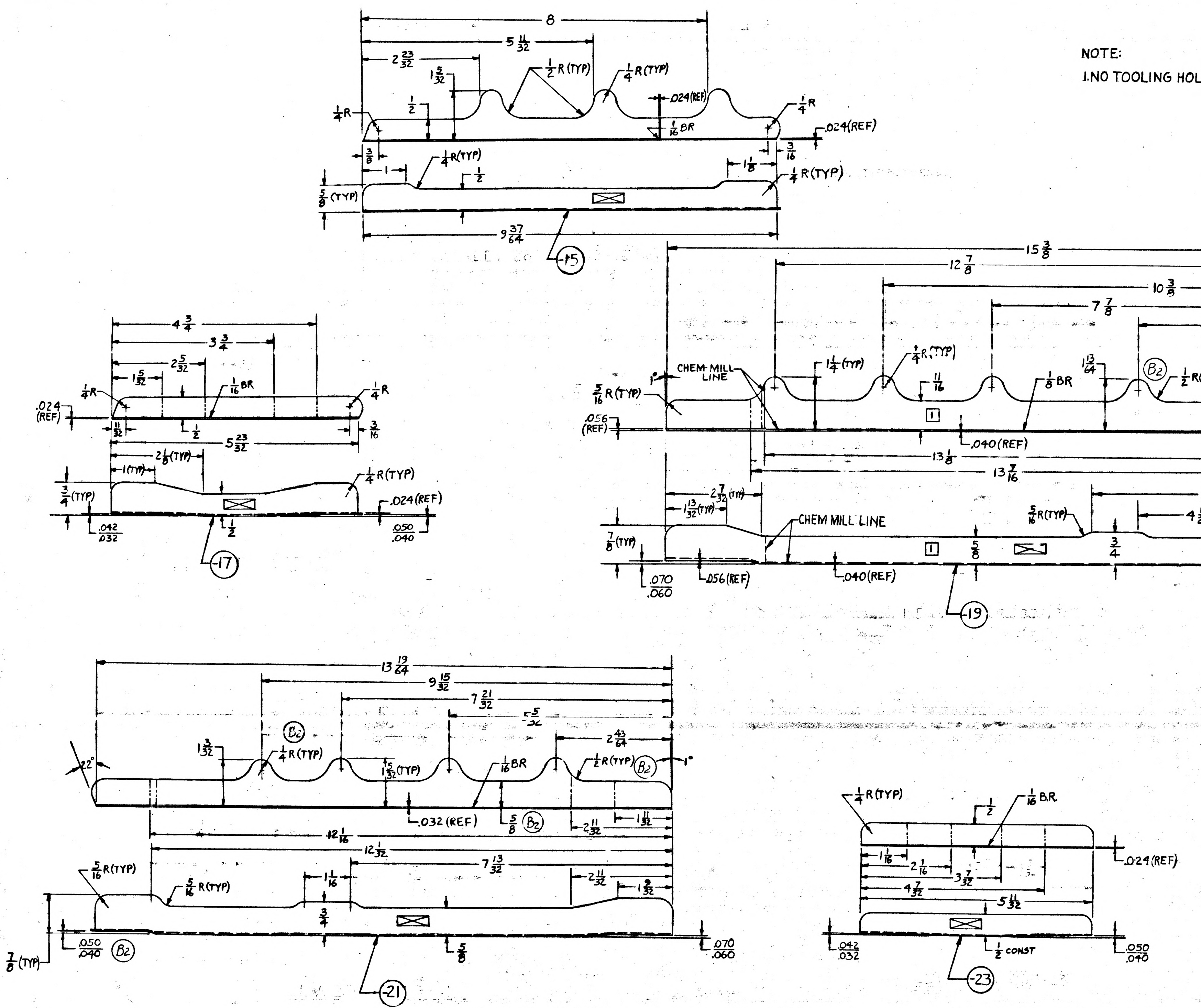
ENG 77.2 7-65

01

NAS 9-1100

NOTE:

1. NO TOOLING HOLES PERMITTED IN PARTS.


-15
-17
-19
-21
-23
8
5 11/32
2 23/32
1 5/32
1/2 R (TYP)
1/4 R (TYP)
.024 (REF)
1/16 BR
1/4 R
9 37/64
5/8 (TYP)
15 3/8
12 7/8
10 3/8
7 7/8
4 33/64
CHEM MILL LINE
1 1/4 (TYP)
13/64
B2
.040 (REF)
.056 (REF)
13 1/8
13 7/16
5 9/16
4 1/2
2 7/32 (TYP)
1 13/32 (TYP)
5/16 R (TYP)
.050
.040
.070
.060
4 3/4
3 3/4
2 5/32
5 23/32
.042
.032
13 19/64
9 15/32
7 21/32
2 43/64
12 1/16
12 1/32
7 13/32
2 11/32
.032 (REF)
5/8
3/4
22°
1°
5 11/32
4 7/32
3 7/32
2 1/16
1 1/16
1/2 CONST

LDW 280-10993-19

CHEM-MILL LINE TOLERANCE
±1/16 WHERE DEPTH OF ETCH
IS .040 OR LESS (EXCEPT
AS NOTED)
± 1/32 WHERE DEPTH OF ETCH
IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM MILLING	* DEPTH OF CUT
1	.040	.016 (REF)
☐		
☐		

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

LDW280-10993 B

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

LEM MODEL OR END ITEM	SIZE F	CODE IDENT NO. 26512	LDW280-10993 B
	SCALE FULL		SHEET 3.00

NAS 9-1100

01

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO.
EO NO.
CONTROL INFO NO

DWG. NO.	DASH NO. *	TITLE	CHANGE NO.	NEXT ASSEMBLY (SEE MODULE)	REQUIREMENTS	NUMBER REQD.
LDW280-106[illegible]3 ✓	-15	SEE DWG.	B1	LDW280-28159	ADD QUAL. TEST TO EFF.	1
LDW280-10898 ✓	-15 -17		B1			
LDW280-10985 ✓	-15 -17		B1			
LDW280-10986 ✓	-15 -17		B2			
LDW280-10987 ✓	-11 -13 -15 -17 -19		B2			
LDW280-10989 ✓	-15 -17		B1			
LDW280-10990 ✓	-15 -17 -23 -25		C1			
LDW280-1[illegible] ✓	-17 -23 -25 -27 -29 -30		C3			
LDW280-10992 ✓	-13 -15 -17 -21		C2			
LDW280-10993 ✓	-15 -17 -19 -21 -23		C1			
LDW280-10994	-16 -17		B3			
LDW280-10995	-17		B1			
LDW280-10996	-13		B1			
LDW280-10997	-11		B1			
LDW280-11000	-15 -[illegible]		B1			
LDW280-11001	-13		B1			1
LDW280-11002	-11 -13 -15		B1			5 5 5
LDW2[illegible]-11003	-17 -19 -21 -23		B1			6 6 6
LDW280-11007	-11 -13		B1			1
LDW280-11012	-11 -15 -17 -19	SEE DWG.	C1	LDW280-28159	ADD QUAL. TEST TO EFF.	

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		
REASON FOR EO		DESCRIPTION OF EO				GAEC EO RELEASE
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO. / GAEC UNIT NO. / SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG / RECORD EO	DISPOSITION OF PARTS: REWORK / SCRAP	APPROVED BY / DATE	SUPPORT / RELIAB GROUP / GROUP LEADER / STRESS GROUP / LIAISON ENGRG / PROJ ENGRG	GOVT
PRIORITY		DRAWING TITLE		DRAWING NO.		EO NO.

ISSUED BY ____ SECTION ____ GROUP NO ____ PL ____

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

EO. NO LE0280
EO NO. 327
CONTROL INFO NO. LDW280A0538

DWG. NO.	DASH NO. *	TITLE	CHANGE NO.	NEXT ASSEMBLY	REQUIREMENTS	NUMBER REQD.
LDW280-11194	-11	SEE DWG	B2	LDW280-28159	ADD QUAL. TEST TO EFF.	1
LDW280-11331	-11 -13		A1	LDW280-28378 -28378		
LDW280-28379	-1		A1	LDW280-28159		1
LDW280M10604	-1 -7		B4	-28159 -29162		2 2
LDW280M10605	-1		B2	-28159		1
LDW280M10606	-3-1		B3	-28159		
LDW280M10609	-5		B3	-28159		
LDW280M10610	-3		C4	-28159		
LDW280M10869	-3 -4		B4	LDW280-28159 -28159		
LDW280M10902	-1		A1	-28150		
LDW280M10905	-1		A2	-28159		
LDW280M10952	-3		B1	-28159		
LDW280M10955	-1		A1			
LDW280M10956	-1		A1			
LDW280M10969	-1		B2			
LDW280M10977	-1		A2	-28159		
LDW280M10940	-1		B2	-28153		
LDW280M10975	-1		A2	-28153 -51153		
LDW280-11004	-11 -13 -15		B1	-28159		4 4 4
LDW280-11006	-15 -13 -17 -19 -21 -23	SEE DWG.	B1	LDW280-28159	ADD QUAL TEST TO EFF.	1 1 1 1 1 1

FOR THE PRECEEDING DRAWINGS: ADD QUALIFICATION TEST EFFECTIVITY FOR DASH NO'S * NOTED.

DETAIL SPEC REQ		CL II ENGRG CHG ✓		CL I ENGRG CHG		
REASON FOR EO: TO ADD QUALIFICATION TEST		DESCRIPTION OF EO: FOR - * ADDED QUALIFICATION TEST EFFECTIVITY				GAEC EO RELEASE: 16 10/2[illegible]
MODEL: EN	EFFECTIVITY: PROCURING ACTIVITY NO. / GAEC UNIT NO.: NOTED / SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG ✓ / RECORD EO	DISPOSITION OF PARTS: NOT REQD (REWORK / SCRAP)	APPROVED BY / DATE: 10-10-66	SUPPORT / RELIAB GROUP / GROUP LEADER 10/11 / STRESS GROUP 10/11 / LIAISON ENGRG / PROJ ENGRG 10/[illegible]	GOVT 10/11/66
PRIORITY: C		DRAWING TITLE: SEE DWG.		DRAWING NO.: LE0280		EO NO.: 327

ISSUED BY G.V. GREEN X7035 SECTION VEH. DES. INT GROUP NO. 335 PL 35EMA

01

NAS 9-1100

LDW280-10994 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53159	QUAL TEST (72)	1
↑	LDW280-53159	PA-1 (47)	1
	LDW280-53159	LM-15 (45)	1
		THRU	
LM	LDW280-53159	LM-3 (33)	1
PART NO. LDW280-10994-19		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	QUAL TEST (72)	1 EA
LEM	LDW280-28159	LEM-2 (32)	1 EA
LEM	LDW280-28159	LEM-1 (31)	1 EA
LEM	LDW280-28159	LTA-8 (18)	1 EA
PART NO. LDW280-10994-16 & 17		GAEC SCH NO. 30	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00				
REV	B	B	B	B				
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED		GRUMMAN REL INFO B
LAST DASH NO. USED	-19	PRIM NO. 215 | K (001) ME-18 3/28/9

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM I
DOCUMENTATION TYPE II

DRAWN BY	Zaccone 4-18-66	RELIABILITY	
LAYOUT BY			
CHECKED BY	CPB		
GR LEADER	P Henton 4-18		
VEH DES INT	W Bischoff 4-18		
STRUCTURES	FEB AJP 4-18	PROJ ENGR	J Alber RVC 4-19-66
STRUCTURES	R Hilderman 4-18	REL GROUP	A Caramanica 4-21-66
WEIGHTS	D Robesch DL 4-19		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BEAM +Z 30.250
ASCENT STAGE ~ MID SECTION
LOWER THERMAL SHIELD

SIZE B
CODE IDENT NO. 26512
LDW280-10994 B
SCALE FULL NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-10994 REV NC 4-18-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHG LAST REV NC. SH 1 OF 4 WAS 1 OF 1. LOFTED DWG WAS DIMENSION DWG	J Gardella 7-22-66					
A	1	1.00, 1.10, 2.00, 3.00					✓	EO A1	DELETED -11 & ADDED -15. REVISED TITLE, +Z30.250 WAS -Z31.0	LTA-8, LEM-1 -2,3,4,5&6		-11	WGG J Gardella 7-22-66		
	2						✓	EO A2	DELETED -13 & -15, ADDED -16 & -17			-13&-15			
	3	1.00 1.10		DCRF 3231078					CHG EFFECTIVITY OF -16&17, DELETED LEM-3, -4, 5&-6. DCRF 3231078 Ⓡ IN ERROR, -18 IS -17	LTA-8 LEM-1&2	NOT REQ	NOT REQ			
B	1.	1.10, 3.00	2B						INC. EO-B1	LM-1 & -2			E. COX 3-21-69		
	2	1.10, 3.00	2B						INC. EO-B2	LTA-8					
	3	1.00, 1.10							INC LE0280-327	QUAL TEST (70)					
	4	1.00, 1.10 2.00, 3.00	3B 6B						INC EO-B4	LM-3 THRU -45					
	5	1.00, 1.10							INC. LE0280-506	PA-1 (47)					
	6	1.00, 1.10							INC. LE0280-737	QUAL TEST (70)		H.D.	E.C.G.		

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10994	B
SCALE NONE			SHEET 1.10

ENG 77.3 5-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10994-19	E	BEAM	AL ALLOY SH	QQ-A-250/13	ALCLAD 7075	.100 × 4¾ × 41.	T6	88	
								LDW280-10994-17	E	BEAM	AL ALLOY SH	QQ-A-250/13	ALCLAD 7075	.063 × 4½ × 9½	T6	88	
								LDW280-10994-16	E	BEAM	AL ALLOY SH	QQ-A-250/13	ALCLAD 7075	.100 × 4¾ × 41.	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10994	B

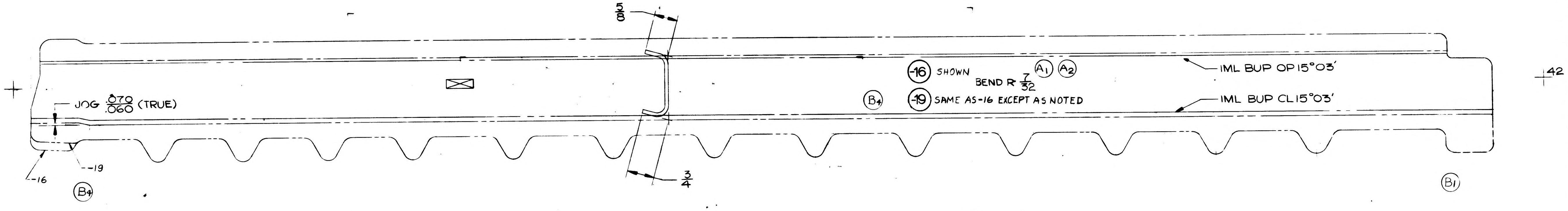
SCALE NONE

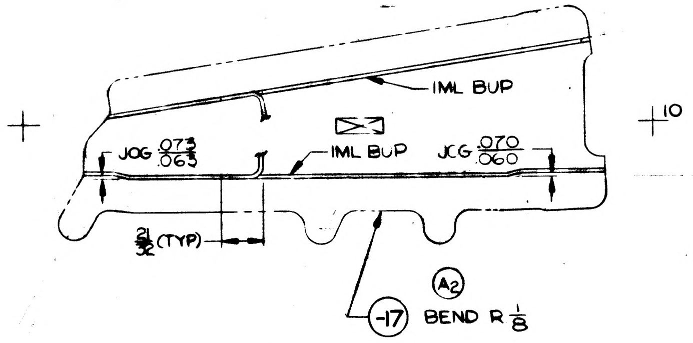
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


5/8
JOG .070/.060 (TRUE)
-16 SHOWN
BEND R 7/32
A1
A2
-19 SAME AS-16 EXCEPT AS NOTED
B4
IML BUP OP 15°03'
IML BUP CL 15°03'
-16
-19
B4
3/4
B1
42


IML BUP
10
JOG .073/.063
IML BUP
JOG .070/.060
21/32 (TYP)
A2
-17 BEND R 1/8

01/02

NAS 9-1100

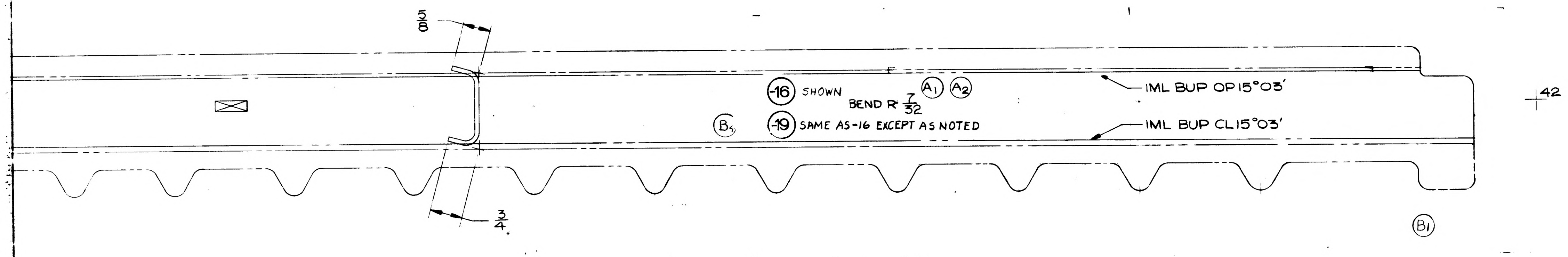
CODE IDENT NO 26512

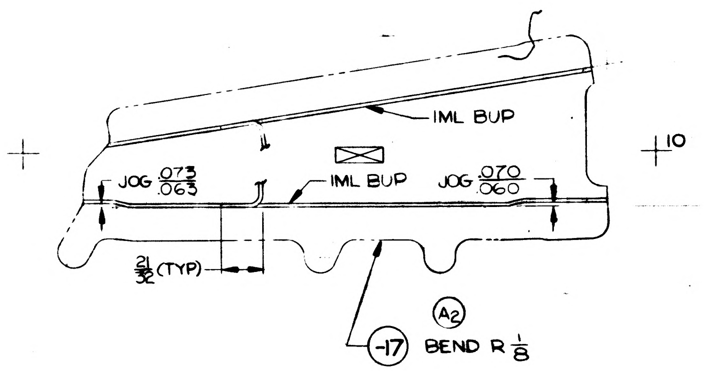
LDW280-10994

SH 3

TRAM & MIC L.Y.

NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS





102/02 NAS 9-1100

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ✓ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	✓

DWG SIZE 28x58
PRINTING INFO ONLY
FULL SIZE SHEET AREA (30x60) = 12.5 SQ. FT.
½ SIZE SHEET AREA (¼ OF FULL) = 3.125 SQ. FT.
PRINT TRIM LINE

LDW280-10994 B

LDW280-10994 B

CODE IDENT NO 26512
LDW280-10994 SH 3

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

LEM MODEL OR END ITEM	SIZE H	CODE IDENT NO. 26512	LDW280-10994 B
	SCALE FULL		SHEET 3.00

FOR PHOTO REPRODUCTION K2

ENG 73-6 6-64

LDW280-10995 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	LEM-2(32)	1
LEM	LDW280-28159	LEM-1(31)	1
LEM	LDW280-28159	LTA-8(18)	1
PART NO. LDW280-10995-11		GAEC SCH NO. 30	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED
LAST DASH NO. USED -11

GRUMMAN REL INFO A

PRIM NO.	LE(001)	
215	MP-A	8-3-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ± .020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO NAS 9-1100
LINE ITEM * 1
DOCUMENTATION TYPE II

DRAWN BY	ZACCONE
LAYOUT BY	ZACCONE
CHECKED BY	
GR.LEADER	P.HENTON 4/16/66
VEH DES INT	L.PAULSRUD 4/16/66
STRUCTURES	A.P.&F.BUNCE
STRUCTURES	R.HILDERMAN 4/16/66
WEIGHTS	D. ROBESCH 4/19/66

PROJ ENGR J.ALBER 4/19/66
REL GROUP C.BOTTI 4/21/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

PLATE
ASCENT STAGE - MID SECT. LOWER THERMAL
SHIELD L.H. FWD. - Y 71.261

SIZE B
CODE IDENT NO. 26512
LDW280-10995 A
SCALE NONE
SHEET 1.00 OF 4

MG 77.1 12-65

SUPERSEDES LDW280-10995 NO CHANGE 7-26-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE LAST REV NO CHANGE SH1OF4 WAS SH1OF3 A. MONTEMAGNO 7-26-66				MONTEMAGNO 7-26-66		
A	1	1.00, 1.10 2.00 & 3.00						DCRF 323-1078	IN MODEL BLOCK REMOVED LEM-3(33) LEM-4(34) LEM-5(35) & LEM-6(36)	LEM-3 THRU LEM-6		✓			
	2	3.00	4C						ADDED 3/4 DIM.		NOT	REQD	JK		

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10995	A
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10995-11	E	PLATE	AL ALLOY SH	QQ-A-250/13	7075-T6 CLAD	.050 X 2 1/2 X 3		88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-10995	A

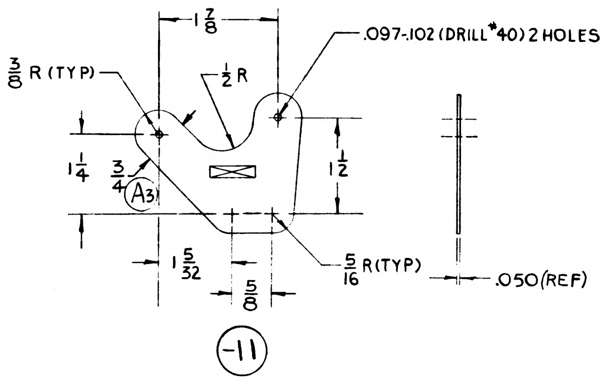
SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PART.



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY~~.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	✓
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

LDW280-10995 A

LDW230-10995 A

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE C	CODE IDENT NO. 26512	LDW280-10995	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

NAS 9-1100

01

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. ____ EO NO. ____
CONTROL INFO NO ____

DWG. NO.	DASH NO.	TITLE	CHANGE NO	NEXT ASSEMBLY (PER MODULE)	REQUIREMENTS	NUMBER REQD.
LDW280-10[illegible] ✓	-15	SEE DWG.	B1	LDW280-28159	ADD QUAL. TEST TO EFF.	1
LDW280-10898 ✓	-15		B1			
	-17					
LDW280-10985 ✓	-15		B1			
	-17					
LDW280-10986 ✓	-15		B2			
	-17					
LDW280-10987 ✓	-11		B2			
	-13					
	-15					
	-17					
	-19					
LDW280-10989 ✓	-15		B1			
	-17					
LDW280-10990 ✓	-15		C1			
	-17					
	-23					
	-25					
LDW280-10991 ✓	-17		C3			
	-23					
	-25					
	-27					
	-29					
	-30					
LDW280-10992 ✓	-13		C2			
	-15					
	-17					
	-21					
LDW280-10993 ✓	-15		C1			
	-17					
	-19					
	-21					
	-23					
LDW280-10994 ✓	-16		B3			
	-17					
LDW280-10995 ✓	-17		B1			
LDW280-10996	-13		B1			
LDW280-10997	-11		B1			
LDW280-11000	-15 -17 -21		B1			
LDW280-11001			B1			
	-13					1
LDW280-11002	-11		B1			5
	-13					5
	-15					5
LDW280-11003	-17		B1			6
	-19					6
	-21					6
	-23					
LDW280-11007	-11		B1			1
	-13					
LDW280-11012	-11		C1			
	-15					
	-17					
	-19	SEE DWG.		LDW280-28159	ADD QUAL. TEST TO EFF.	

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO

DESCRIPTION OF EO

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY ____ DRAWING TITLE ____ DRAWING NO. ____ EO NO. ____

ISSUED BY ____ SECTION ____ GROUP NO ____ PL ____

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

EO NO. LE0280 EO NO. 327
CONTROL INFO NO. LDW280A0538

DWG. NO.	DASH NO. *	TITLE	CHANGE NO.	NEXT ASSEMBLY	REQUIREMENTS	NUMBER REQD.
LDW280-11194	-11	SEE DWG.	B2	LDW280-28159	ADD QUAL. TEST TO EFF.	1
LDW280-11331	-11		A1	LDW280-28378		
	-13			-28378		
LDW280-28378	-1		A1	LDW280-28159		1
LDW280M10604	-1		B4	-28159		2
	-7			-28162		2
LDW280M10605	-1		B2	-28159		1
LDW280M10606	-3-1		B3	-28159		
LDW280M10609	-5		B3	-28159		
LDW280M10610	-5		B4	-28159		
LDW280M10869	-3		B4	LDW280-28159		
	-4			-28159		
LDW280M10902	-1		A1	-28150		
LDW280M10905	-1		A2	-28159		
LDW280M10952	-3		B1	-28159		
LDW280M10955	-1		A1			
LDW280M10956	-1		A1			
LDW280M10969	-1		B2			
LDW280M10977	-1		A2	-28159		
LDW280M10940	-1		B2	-28153		
LDW280M10975	-1		A2	-28153 -51153 -28159		
LDW280-11004	-11		B1			4
	-13					4
	-15					4
LDW280-11006	-15		B1			1
	-13	SEE DWG.		LDW280-28159	ADD QUAL TEST TO EFF.	1
	-17					1
	-19					1
	-21					1
	-23					1

FOR THE PRECEEDING DRAWINGS: ADD QUALIFICATION TEST EFFECTIVITY FOR DASH NO'S * NOTED.

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑

REASON FOR EO: TO ADD QUALIFICATION TEST

DESCRIPTION OF EO: FOR - * ADDED QUALIFICATION TEST EFFECTIVITY

GAEC EO RELEASE: 10/24

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS	APPROVED BY / DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
LM		NOTED		✓		NOT REQD	10-10-66 / 10/11			10/11	10/11		10/...	10/12/66

PRIORITY C DRAWING TITLE SEE DWG. DRAWING NO. LE0280 EO NO. 327

ISSUED BY G.W. GREEN X7035 SECTION VEH. DES. INT GROUP NO. 335 PL 35 EMP

01
NAS 9-1100

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 506
CONTROL INFO NO. LDW280A-5718

TO THE FOLLOWING DWG'S LISTED BELOW, ADD PA-1(W5) EFFECT

DWG Nº	** DASH Nº	REQ'D/MOD	DWG TITLE	N/A	CHG Nº
LDW280-10987	-11	1	SEE DWG	LDW280-53159	B4
10989	-15, -17	1 EA			B4
10991	-27, -29, -30	1 EA			C5
10992	-21, -23	1 EA			C5
10994	-19	1			B5
10995	-11	1			B3
10996	-11	1			B5
11001	-11, -13	1 EA			B4
11002	-11 -13	7 1			B3
11003	-19, -21	3 EA			B4
11004	-11 -13 -15	4 6 2			B3
11005	-11 -17 -19	5 2 1			B3
11007	-11, -13	1 EA			B3
11012	-11	1			C3
11210	-11	1			A1
11211	-17	1			A2
11212	-13	1			A2
11213	-11, -13, -15, -17, -19	1 EA			A1
11214	-11, -13, -15	1 EA			A1
11215	-11, -13, -15	1 EA			A2
11216	-11, -15	1 EA			A2
11217	-11, -13, -15, -17, -19, -21	1 EA			A2
11218	-11, -13	1 EA			A2
11219	-13, -15, -17, -21 -19	1 EA 3			A2
11220	-11, -13, -15, -17, -25, -21	1 EA			A2
11221	-13	1			A3
11222	-11 -13	1 3			A2
11223	-11	1			A2
11224	-11, -13, -15 -17, -19	1 EA			A1
11225	-11, -13, -15	1 EA			A1
11226	-11, -13, -15 -19, -21 -17	1 EA 3			A1
11227	-11, -15	1 EA			A2
11228	-11 -15, -17, -19, -23	1 2 EA			A2
LDW280-11229	-15, -13	1 EA	SEE DWG	LDW280-53159	A2

DETAIL SPEC REQ ☐ | CL II ENGRG CHG ☑ | CL I ENGRG CHG ☐ | LCR 19-1124 | 5

REASON FOR EO: UPDATE DWG REQ'TS FOR PA-1

DESCRIPTION OF EO: ADDED PA1(W5) REQ'TS TO **

GAEC EO RELEASE: C JK 3/11/67

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		PA-1 (W5)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK | SCRAP)

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY		M.D.						AC
DATE	3/7/67	3/7/67		3/7/67	3/7		3/8/67	3-11-67
5	VIDI	Titcomb						

PRIORITY: C

DRAWING TITLE: NOTED ABOVE

DRAWING NO.: LEO 280

EO NO.: 506

ISSUED BY M. SHAPIRO K1153 SECTION VDI GROUP NO. 335 PL 35

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-10996-13	E	PLATE	AL ALY SH	QQ-A-250/13	ALCLAD 7075-T6	.050×2×3¼	NONE	88	
								LDW280-10996-11	E	PLATE	AL ALY SH	QQ-A-250/13	ALCLAD 7075-T6	.050×3¼×3⅜	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

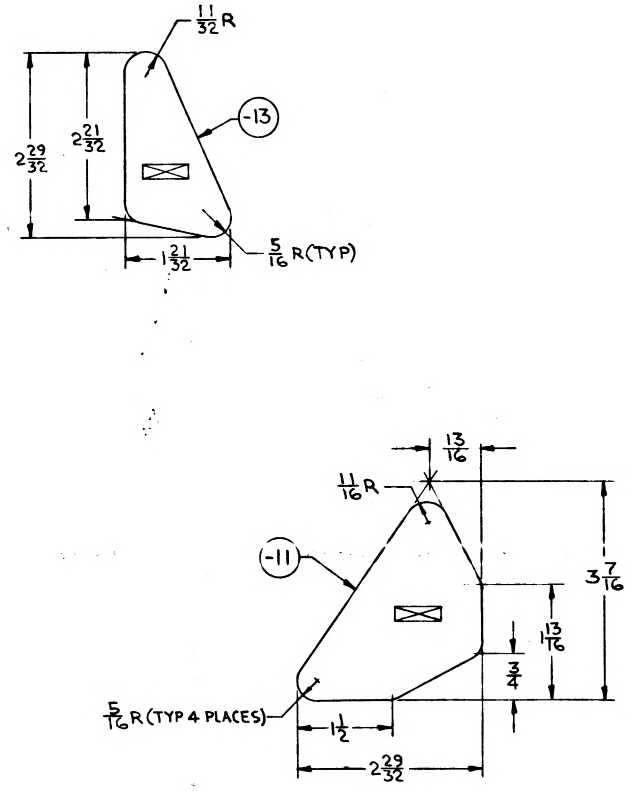
SIZE B
CODE IDENT NO. 26512
LDW280-10996
A
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS.



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
$\sqrt{125}$ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
$\sqrt{200}$ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.001	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

LEM	SIZE C	CODE IDENT NO. 26512	LDW280-10996	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

LDW280-10996 A

NAS 9-1100

LDW280-10996 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28159	LTA-8(18)	1

PART NO. LDW280-10996-13

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW 280-53159	QUALTEST(70)	1
		PA-1(47)	1
		LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
		LM-4(34)	1
	LDW2[illegible]-53159	LM-3(33)	1
	LDW280-28159	QUALTEST(70)	1
		LM-2(32)	1
		LM-1(31)	1
LM	LDW280-28159	LTA-8(18)	1

PART NO. LDW280-10996-11

GAEC SCH NO. 30

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.

GAEC SCH NO.

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV	B	B	A	A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED

LAST DASH NO. USED -13

GRUMMAN REL INFO B

PRIM NO. 215 K(001) ME-3R 12/12/[illegible]

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY	S.GORTLER	RELIABILITY	
LAYOUT BY			
CHECKED BY			
GR LEADER	PAUL HENTON 4/16		
VEH DES INT	W.BISCHOFF 4/16		
STRUCTURES	F.B.J.V	PROJ ENGR	J. ALBER 4/19
STRUCTURES	R.HILDERMAN 4/16	REL GROUP	
WEIGHTS	D.ROBESCH 4/19		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

PLATE
ASCENT STAGE-MID SECT.--Z31 BEAM
LOWER THERMAL SHIELD

SIZE B

CODE IDENT NO. 26512

LDW280-10996 B

SCALE NONE

SHEET 1.00 OF 4

(B)

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-10996 "NO CHANGE" 4/19/66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
									RETRACED~NO CHANGE~LAST REV NO CHANGE, HERB. SCHWETER 7-28-66 SHEET 1.00 OF 4 WAS SH 1 OF 1						
A	1	1.00 1.10		DCRF 323-1078				Ⓡ	IN M/B REMOVED EFF LEM-3 THRU LEM-6 FOR -11 & -13 EG	NOTED		-11 & -13	HERB. SCHWETER 7-28-66		
B	1	1.00					✓	LEO280-327	FOR -13 ADDED QUALIFICATION TEST EFFECTIVITY	QUAL TEST	NOT	REQ'D	G. WIEBER 12-5-63		
	2	1.00					✓	LEO280-365	ON-11 ADDED "QUAL TEST"(FOR N/A LDW280-28159)	QUAL TEST	NOT	REQ'D			
	3	1.00					✓	LEO280-375	FOR-11 & -13 ADDED LM-3(33) THRU LM-15(45) EFF.	LM-3 THRU LM-15	NOT	REQ'D			
	4	1.00					✓	EOB4	FOR-13, IN M/B REMOVED EFF LM-1 THRU LM-15 & QUAL TEST	LM-1 THRU LM-15 & QUAL. TEST		-13			
	5	1.00					✓	LEO Z80 506 LCD—1124	ADDED PA-1(47) REQ. TO-11	PA-1(47)	NOT	REQ'D			
	6	1.00		Ⓡ			✓	LEO280-737 LCD-2104	FOR-11 ADDED QUAL. TEST REQUIREMENTS (FOR N/A LDW280-53159)	QUAL TEST	NOT	REQ'D 12/10/68		L.D.	

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10996	B
SCALE NONE			SHEET 1.10

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280 | EO NO. 1488
CONTROL INFO NO. LDW280B8212

FOR THE FOLLOWING DWGS (*) [redacted]

REMOVE [redacted] LM-15 (45): EFF.

DRAWING № (*)	** DASH № [redacted]	[redacted]	TITLE	NEXT ASSEMBLY	CHANGE №
LDW280 - 11004 ✓	-11 13 15	[redacted]	SEE DWG	LDW 280 - 53159	B5
-11[illegible]5 ✓	-11-17-19	[redacted]			B5
-11211 ✓	-21	[redacted]			B1
-11007 ✓	-11 13	[redacted]			B5
-10996	-11	[redacted]			C1
-11012	-11	[redacted]			C5
-11798	-11,-13	[redacted]			B1
-11210	-13	[redacted]			B1
-11212	-15	[redacted]			B1
LDW280 - 11213	-11,-13,-15,-17-19	[redacted]	SEE DWG	LDW280- 53159	A3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD #3587 [redacted] PKG 13 PG. 9 [illegible] (5)

REASON FOR EO
CONFIGURATION CHANGE TO LM-15

DESCRIPTION OF EO
FOR [redacted] (* [redacted] **) REMOVED
[redacted] LM- 15 (45) EFF.

GAEC EO RELEASE 7-17-69

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO ☐
DISPOSITION OF PARTS: REWORK ☐ SCRAP ✓

APPROVED BY		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
DATE	7/8/69						7/10/69	7-26-69

PRIORITY C
DRAWING TITLE: SEE DRAWING
DRAWING NO. LEO-280
EO NO. 1488

7-15-69
ISSUED BY GEO. W. ROCKLEIN X86048 4/25/69 (ML) SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01 NAS 9-1100

LDW280-10997 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	LEM-2(32)	1
LEM	LDW280-28159	LEM-1(31)	1
LEM	LDW280-28159	LTA-8(18)	1

PART NO. LDW280-10997-11

GAEC SCH NO. 30

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH				
SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -11

GRUMMAN REL^C INFO A

PRIM NO. 215 | K001 | MP-A | 9-10-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	R. GORTLER		
LAYOUT BY			
CHECKED BY			
GR. LDR	P. HENTON ACP 4/18		
VEH DES INT	W. BISCHOFF 4/18		
STRUCTURES	JV FEB 4/18	PROJ ENGR	J. ALBER RMC 4/21
STRUCTURES	HILDERMAN 4/18	REL GROUP	A CARAMANICA 4/25
WEIGHTS	P ROBESCH 4/20		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE - MID SECTION - LOWER
THERMAL SHIELD - L.H. AFT INBOARD

SIZE B | CODE IDENT NO. 26512 | LDW280-10997 | A

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-10997 'NO CHG' 4/25/66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
A	1	1.00, 1.10, 2.00, 3.00							RETRACED NO CHG LAST REVISION NO CHG. SH. 1 OF 4 WAS 1 OF 3. LOFTED DWG WAS DIMENSIONED.	JAEGGI	8-21-	66			9-21-66
	2			DCRF 323-1078					IN MOD/BLK: REMOVED EFF LEM-3 THRU LEM-6 ON-11	NOTED	NOT	REQD	HERB SCHNEIDER 9-1-66		

FOR CONTINUATION OF REVISIONS SEE SHEET ______

® GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-10997	A
SCALE NONE		SHEET 1.10	

ENG 77.3 5-66

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-10997-11	E	ANGLE	AL ALLOY SH	QQ-A-250/13	7075 ALCLAD	.063 x 2 x 3 7/8	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

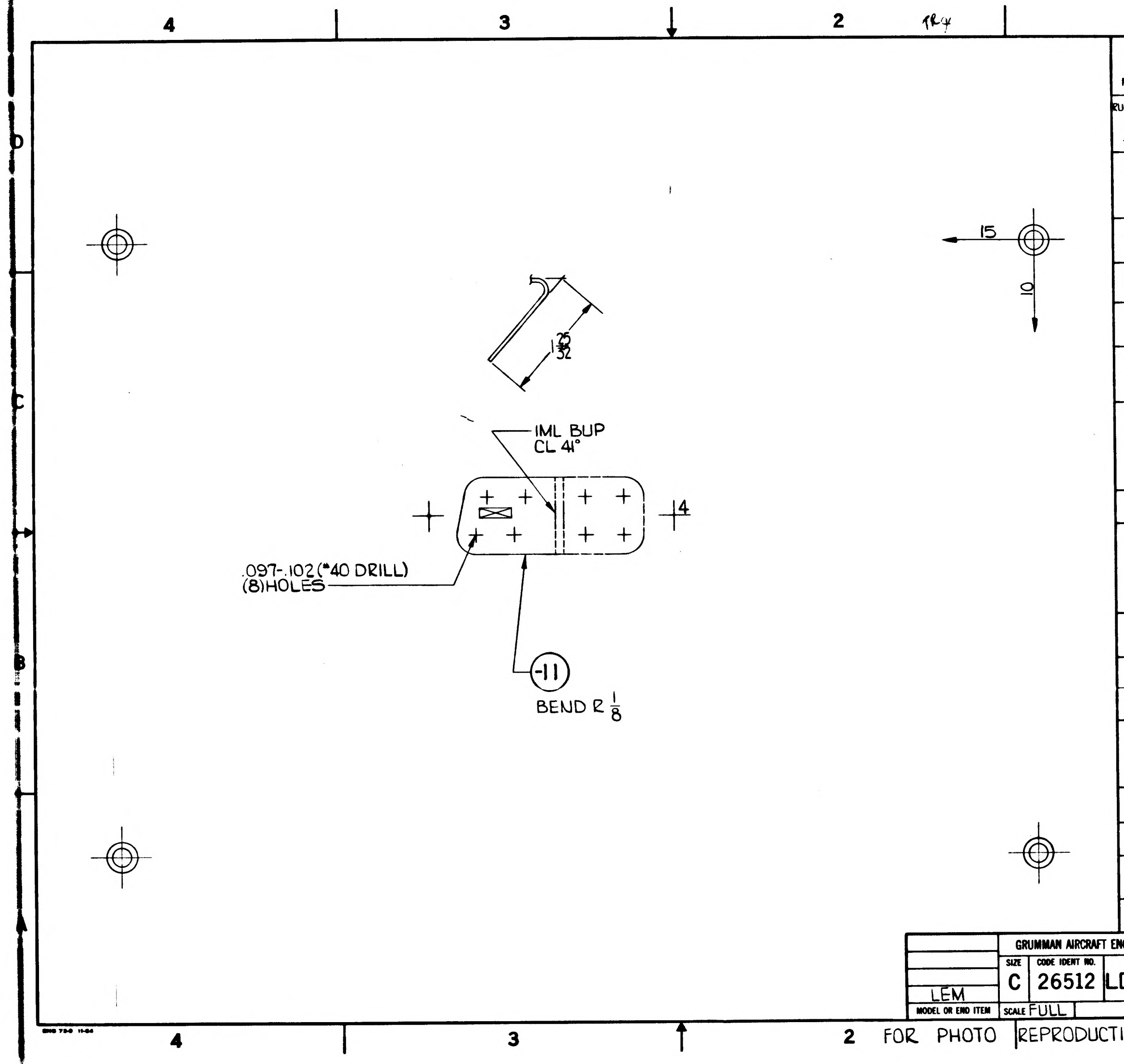
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-10997
A
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	C	26512	LDW280-10997	A
	SCALE FULL		SHEET 3.00	

LDW280-10997 A

LDW280-10997 A

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO.
EO NO.
CONTROL INFO NO

DWG. NO.	DASH NO. *	TITLE	CHANGE NO.	NEXT ASSEMBLY (PER MODULE)	REQUIREMENTS	NUMBER REQD.
LDW280-10[illegible] ✓	-15	SEE DWG.	B1	LDW280-28159	ADD QUAL TEST TO EFF.	1
LDW280-10898 ✓	-15		B1			
	-17					
LDW280-10985 ✓	-15		B1			
	-17					
LDW280-10986 ✓	-15		B2			
	-17					
LDW280-10987 ✓	-11		B2			
	-13					
	-15					
	-17					
	-19					
LDW280-10989 ✓	-15		B1			
	-17					
LDW280-10990 ✓	-15		C1			
	-17					
	-23					
	-25					
LDW280-10[illegible] ✓	-17 -23 -25 -27 -29 -30		C3			
LDW280-10992 ✓	-13		C2			
	-15					
	-17					
	-21					
LDW280-10993 ✓	-15		C1			
	-17					
	-19					
	-21					
	-23					
LDW280-10994 ✓	-16		B3			
	-17					
LDW280-10995 ✓	-17		B1			
LDW280-10996 ✓	-13		B1			
LDW280-10997 ✓	-11		B1			
LDW280-11000	-15 -17 -21		B1			
LDW280-11001			B1			
	-13					1
LDW280-11002	-11		B1			5
	-13					5
	-15					5
LDW2[illegible]-1100 3	-17 -19 -21 -23		B1			6 6 6
LDW280-11007	-11		B1			1
	-13					
LDW280-11012	-11		C1			
	-15					
	-17					
	-19	SEE DWG.		LDW280-28159	ADD QUAL TEST TO EFF.	

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO
DESCRIPTION OF EO
GAEC EO RELEASE
MODEL
EFFECTIVITY: PROCURING ACTIVITY NO. | GAEC UNIT NO | SUB CONTR UNIT NO.
DRAWING CHANGE REQD: REVISE DWG | RECORD EO
DISPOSITION OF PARTS: REWORK | SCRAP
APPROVED BY
DATE
SUPPORT | RELIAB GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG | GOVT
PRIORITY
DRAWING TITLE
DRAWING NO.
EO NO.

ISSUED BY________ SECTION________ GROUP NO.______ PL____

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*

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

EO. NO. LE0280
EO NO. 327
CONTROL INFO NO. LDW280A0538

DWG. NO.	DASH NO. *	TITLE	CHANGE NO.	NEXT ASSEMBLY	REQUIREMENTS	NUMBER REQD.
LDW280-11194	-11	SEE DWG	B2	LDW280-28159	ADD QUAL. TEST TO EFF.	1
LDW280-11331	-11		A1	LDW280-28378		1
	-13			-28378		1
LDW280-28378	-1		A1	LDW280-28159		1
LDW280M10604	-1		B4	-28159		2
	-7			-28162		2
LDW280M10605	-1		B2	-28159		1
LDW280M10606	-3-1		B3	-28159		
LDW280M10609	-5		B3	-28159		
LDW280M10610	-3		C4	-28159		
LDW280M10869	-3		B4	LDW280-28159		
	-4			-28159		
LDW280M10902	-1		A1	-28150		
LDW280M10905	-1		A2	-28159		
LDW280M10952	-3		B1	-28159		
LDW280M10955	-1		A1			
LDW280M10956	-1		A1			
LDW280M10969	-1		B2			
LDW280M10977	-1		A2	-28159		
LDW280M10940	-1		B2	-28153		
LDW280M10975	-1		A2	-28153 -51153		
LDW280-11004	-11		B1	-28159		4
	-13					4
	-15					4
LDW280-11006	-15		B1			1
	-13 -17 -19 -21 -23	SEE DWG.		LDW280-28159	ADD QUAL TEST TO EFF.	1 1 1 1 1

FOR THE PRECEEDING DRAWINGS: ADD QUALIFICATION TEST EFFECTIVITY FOR DASH NO'S * NOTED.

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

REASON FOR EO: TO ADD QUALIFICATION TEST

DESCRIPTION OF EO: FOR - * ADDED QUALIFICATION TEST EFFECTIVITY

GAEC EO RELEASE: 10/[illegible]

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO	SUB CONTR UNIT NO.
LM			NOTED

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK | SCRAP — NOT REQ'D
APPROVED BY — DATE: 10-10-66, 10/11, 10/11, 10/11, 10/12/66
SUPPORT | RELIAB GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG | GOVT

PRIORITY: C
DRAWING TITLE: SEE DWG.
DRAWING NO.: LE0280
EO NO.: 327

ISSUED BY G.M. GREEN X7[illegible] SECTION VEH. DES. INT GROUP NO. 335 PL 35 EMP

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NAS 9-1100

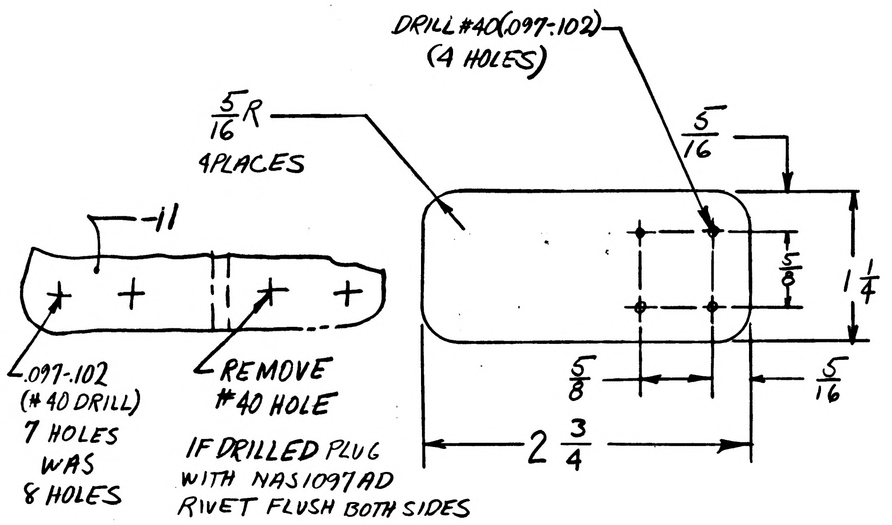
ENG 32.1 REV 3-65 *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW280-10997 | EO NO. B2

CONTROL INFO NO. LM-3-4318


DRILL #40(.097-.102)
(4 HOLES)
5/16 R
4PLACES
5/16
-11
5/8
1 1/4
5/8
5/16
2 3/4
.097-.102
(#40 DRILL)
7 HOLES
WAS
8 HOLES
REMOVE
#40 HOLE
IF DRILLED PLUG
WITH NAS1097AD
RIVET FLUSH BOTH SIDES

ADD-13
MAKE FROM AL.ALLOY
7075-T6, QQ-A-250/13
N/A LDW280-28159
EFF. LM-1(31) & -2(32)
1 REQ'D PER MOD
STOCK SIZE .090 X 1 1/2 X 3
FINISH 76

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: TO ELIMINATE MISMATCH OF HOLES ON N/A LDW280-28159

IN FIELD B/M & M/B

DESCRIPTION OF EO: REMOVED #40 HOLE IN -11 ADDED -13 EFF LM-1(31) & -2(32)

GAEC EO RELEASE: C

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8(18)	QUAL TEST(70)
		LM-1(31)	
		LM-2(32)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY	[illegible]	[illegible]			RN	[illegible]	[illegible]	[illegible]
DATE	12/6/66	12/6			11-23-66	11-23-66	11-28-66	11-23-66
1	VDI	~~THERM~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C3

DRAWING TITLE: ANGLE A/S M/S LOWER THERMAL SHIELD L.H. AFT INBD

DRAWING NO.: LDW280-10997

EO NO.: B2

ISSUED BY LIAISON/TARTAMELLA (X2151) SECTION VDI GROUP NO. 335 PL 35

01 NAS 9-1100

LDW280-11000 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	LEM-2(32)	1 EA
LEM	LDW280-28159	LEM-1(31)	1 EA
LEM	LDW280-28159	LTA-8(18)	1 EA

PART NO. LDW280-11000-13,-15,-17, -19 & -21

GAEC SCH NO. 30-

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -21

GRUMMAN REL INFO

PRIM NO.	CE(001)	
215	MP-77-6	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY	ZACCONE		
LAYOUT BY			
CHECKED BY			
GR LEADER	P.HENTON (ACP) 4/18/66		
VEH DSGN INT	W.BISCHOFF 4/18/66		
STRUCTURES	AJP F.B. 4/18/66	PROJ ENGR	J.ALBER R.C. 4/19/66
STRUCTURES	HILDERMAN 4/18/66	REL GROUP	A.CARAMANICA
WEIGHTS	D.ROBESCH D.L. 4/19/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

PLATE
ASCENT STAGE-MID SECT.-LOWER
THERMAL SHIELD-LH FWD-Y44.00

SIZE	CODE IDENT NO.		
B	26512	LDW280-11000	A

SCALE NONE

SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11000 NO CHG 4-19-66

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
									REDRAWN NO CHG-LAST REV NO CHG G.ZARCADOOLAS 8-27-66						
									ADDED SH 1.10 - SH 1.00 OF 4 WAS SH 1.00 OF 3-LOFTED DWG WAS DIMENSIONED						
A	1	1.00,2.00 & 3.00						ECA1	DELETED -11 - CREATED -13	LTA-8, LEM-1 & LEM-2		-11	G.ZARCA-DOOLAS 8-5-66		
	2								ADDED -15,-17,-19 & -21	NOTED	NOT	REQD			
	3			DCRF 323-1078				Ⓡ	FROM -11 REMOVED LEM 3 THRU 6 EFFECTIVITY	NOTED		-11	JK	RMC	

CHG APPROVED

LTR	GROUP LDR	VEH DSGN INT	STRUCTURES	STRUCTURES	WEIGHTS					
A	8/30		9/1							

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11000	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11000-21	E	DOUBLER	AL ALY SH	QQ-A-250/5	2024-T3 ALCLAD	.040 X 5 7/8 X 6 3/8	NONE	88	5G
		LDW280-11000-19	E	DOUBLER	AL ALY SH	QQ-A-250/13	7075 ALCLAD	.063 X 1 3/8 X 4 1/2	T6	88	7E
		LDW280-11000-17	E	DOUBLER	AL ALY SH	QQ-A-250/13	7075 ALCLAD	.070 X 2 5/8 X 6	T6	88	3D
		LDW280-11000-15	E	PLATE	AL ALY SH	QQ-A-250/13	7075-T6 ALCLAD	.063 X 2 X 3 3/4	NONE	88	5B
		LDW280-11000-13	E	PLATE	AL ALY SH	QQ-A-250/13	7075-T6 ALCLAD	.050 X 2 X 4 3/4	NONE	88	7B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030
T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

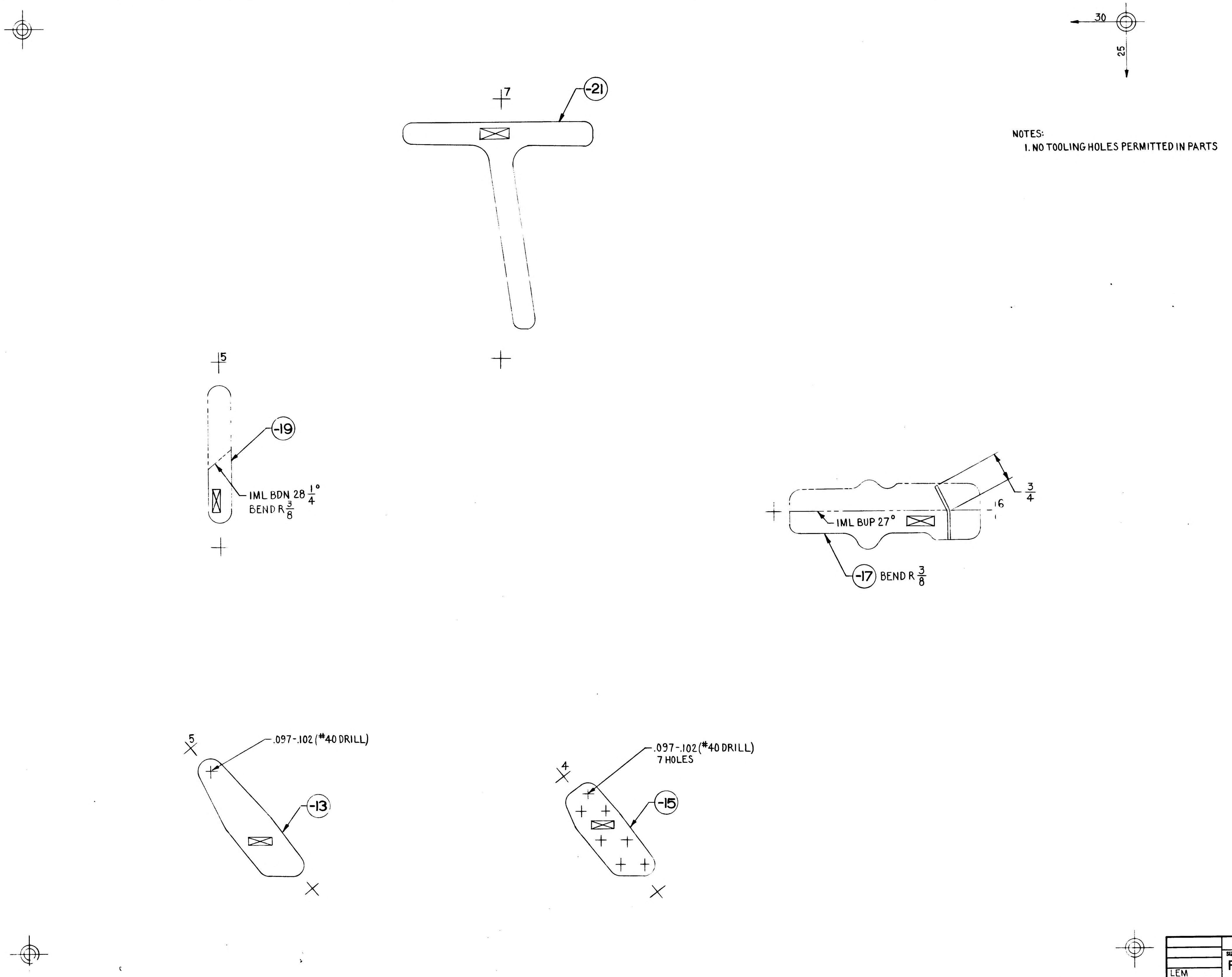
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11000	A
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	√

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LEM	SIZE F	CODE IDENT NO. 26512	LDW280-11000 A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

FOR PHOTO REPRODUCTION

K2

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO
EO NO.
CONTROL INFO NO.

DWG. NO.	DASH NO.*	TITLE	CHANGE NO	NEXT ASSEMBLY (PER MODULE)	REQUIREMENTS	NUMBER REQD.
LDW280-10[illegible] ✓	-15	SEE DWG.	B1	LDW280-28159	ADD QUAL TEST TO EFF.	
LDW280-10898 ✓	-15		B1			
	-17					
LDW280-10985 ✓	-15		B1			
	-17					
LDW280-10986 ✓	-15		B2			
	-17					
LDW280-10987 ✓	-11		B2			
	-13					
	-15					
	-17					
	-19					
LDW280-10989 ✓	-15		B1			
	-17					
LDW280-10990 ✓	-15		C1			
	-17					
	-23					
	-25					
LDW280-10991 ✓	-17		C3			
	-23					
	-25					
	-27					
	-29					
	-30					
LDW280-10992 ✓	-13		C2			
	-15					
	-17					
	-21					
LDW280-10993 ✓	-15		C1			
	-17					
	-19					
	-21					
	-23					
LDW280-10994 ✓	-16		B3			
	-17					
LDW280-10995 ✓	-17		B1			
LDW280-10996 ✓	-13		B1			
LDW280-10997 ✓	-11		B1			
LDW280-11000 ✓	-15 -17 -19 -21		B1			
LDW280-11001			B1			
	-15					1
LDW280-11002	-11		B1			5
	-13					5
	-15					5
LDW280-11003	-17		B1			6
	-19					6
	-21					6
	-23					
LDW280-11007	-11		B1			1
	-13					
LDW280-11012	-11		C1			
	-15					
	-17					
	-19	SEE DWG.		LDW280-28159	ADD QUAL. TEST TO EFF.	

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG
REASON FOR EO | DESCRIPTION OF EO | GAEC EO RELEASE
MODEL | EFFECTIVITY: PROCURING ACTIVITY NO. | GAEC UNIT NO. | SUB CONTR UNIT NO. | DRAWING CHANGE REQD: REVISE DWG, RECORD EO | DISPOSITION OF PARTS: REWORK, SCRAP | APPROVED BY | DATE | SUPPORT | RELIAB GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG | GOVT
PRIORITY | DRAWING TITLE | DRAWING NO. | EO NO.

ISSUED BY________ SECTION________

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

EO. NO LEO280
EO NO. 327
CONTROL INFO NO. LDW280A0538

DWG. NO.	DASH NO.*	TITLE	CHANGE NO.	NEXT ASSEMBLY	REQUIREMENTS	NUMBER REQD.
LDW280-11194	-11	SEE DWG.	B2	LDW280-28159	ADD QUAL. TEST TO EFF.	1
LDW280-11331	-11		A1	LDW280-28378		
	-13			-28378		
LDW280-28378	-1		A1	LDW280-28159		1
LDW280M10604	-1		B4	-28159		2
	-2			-28162		2
LDW280M10605	-1		B2	-28159		1
LDW280M10606	-3-1		B3	-28159		
LDW280M10609	-5		B3	-28159		
LDW280M10610	-3		C4	-28159		
LDW280M10869	-3		B4	LDW280-28159		
	-4			-28159		
LDW280M10902	-1		A1	-28150		
LDW280M10905	-1		A2	-28159		
LDW280M10952	-3		B1	-28159		
LDW280M10955	-1		A1			
LDW280M10956	-1		A1			
LDW280M10969	-1		B2			
LDW280M10977	-1		A2	-28159		
LDW280M10940	-1		B2	-28153		
LDW280M10975	-1		A2	-28153 -51153		
LDW280-11004	-11		B1	-28159		4
	-13					4
	-15					4
LDW280-11006	-15		B1			1
	-13	SEE DWG.		LDW280-28159	ADD QUAL TEST TO EFF.	1
	-17					1
	-19					1
	-21					1
	-23					1

FOR THE PRECEEDING DRAWINGS: ADD QUALIFICATION TEST EFFECTIVITY FOR DASH NO'S* NOTED.

DETAIL SPEC REQ | CL II ENGRG CHG | ✓ CL I ENGRG CHG

REASON FOR EO: TO ADD QUALIFICATION TEST

DESCRIPTION OF EO: FOR -* ADDED QUALIFICATION TEST EFFECTIVITY

GAEC EO RELEASE: 16 10/66

MODEL: LM

EFFECTIVITY: GAEC UNIT NO.: NOTED

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO

DISPOSITION OF PARTS: NOT REQD

APPROVED BY | DATE: 10-10-66 | 10/11 | 10/11 | 10/11

SUPPORT | RELIAB GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG | GOVT

PRIORITY: C

DRAWING TITLE: SEE DWG.

DRAWING NO.: LE0280

EO NO.: 327

ISSUED BY ________ SECTION VEH. DES. INT GROUP NO. 335 PL 35 EMR

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NAS 9-1100

C

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11000
EO NO. B3
CONTROL INFO NO. LDW280A5174

FOR -13&-15
IN M/B REMOVE EFF LM-1(31)&LM-2(32) QUAL TEST (70)

DETAIL SPEC REQ ☐ CL II ENGRG CHG ✓ CL I ENGRG CHG ☐ 3

REASON FOR EO: PARTS NO LONGER REQUIRED REPLACED BY LDW280-11221-11&-13

DESCRIPTION OF EO: FOR -13&-15 IN M/B REMOVED EFF LM-1, LM-2 & QUAL. TEST

GAEC C EO RELEASE: FR 1/24/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		NOTED	

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
✓			✓

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
APPROVED BY					PB			
DATE	1/23/67	1/23/67		1/23	1/24		1/24/67	1/24/67
#1	VDI							

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	PLATE - A/S - M/B - LWR. THERMAL SHIELD - LH. FWD. - Y44.00	LDW280-11000	B3

ISSUED BY H. ZWEIGMAN X1156 SECTION VDI GROUP NO. 335 PL 35

01 1 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11001-13	E	SPLICE	AL ALY SH	QQ-A-250/13	7075 ALCLAD	.063X1½X2½	T6	88	
		LDW280-11001-11	E	SPLICE	AL ALY SH	QQ-A-250/13	7075 ALCLAD	.063X1½X2½	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030
T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11001	A

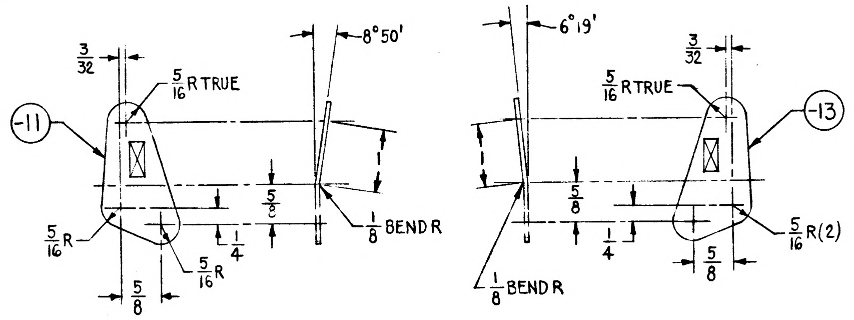
SCALE NONE

SHEET 2.00

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	C	26512	LDW280-11001	A

SCALE FULL
SHEET 3.00

10

LDW280-11001A

LDW280-11001A

01

NAS 9-1100

LDW280-11001 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53159	QUALTEST(70)	1EA
LEM	LDW280-53159	PA-1(47)	1EA
LEM	LDW280-53159	LM-15(45)	1EA
		THRU	
LEM	LDW280-53159	LM-3 (33)	1EA
LEM	LDW280-28159	QUALTEST (70)	1EA
LEM	LDW280-28159	LEM-2(32)	1EA
LEM	LDW280-28159	LEM-1(31)	1EA
LEM	LDW280-28159	LTA-8(18)	1EA

PART NO. LDW280-11001-11 & -13

GAEC SCH NO. 30-

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	B	B	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -13

GRUMMAN REL INFO

PRIM NO. 215 JK(001) ME-3B 10/2/66

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY	FEINER	THERMO	8/25/66 GG for M.T.
LAYOUT BY			
CHECKED BY			
GR LEADER	P.HENTON 4-16-66		
VEH DSGN INT	PAULSRUD 4-16-66		
STRUCTURES	J.V. FEB. 4-16-66	PROJ ENGR	J ALBER RC 4-19-66
STRUCTURES	HILDERMAN 4-16-66	REL GROUP	A.CARAMANICA 4-20-66
WEIGHTS	D.ROBESCH DJL 4-18		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SPLICE
BEAM-Y80.25-ASCENT STAGE-
MID SECTION-LOWER THERMAL SHIELD

SIZE B CODE IDENT NO. 26512 LDW280-11001 B

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11001 NO CHG 4-20-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
									RETRACED NO CHG - LAST REV NO CHG - G.ZARCADOOLAS 8-9-66 ✓ ADDED SH 1.10 - SH 1.00 OF 4 WAS SH 1.00 OF 3. W.M.						
A	1			DCRF 323-1078 ✓					REVISED EFF OF -11 & -13 FROM LTA-8, LEM-1 THRU LEM-6 TO LTA-8, LEM-1 & LEM-2	NOTED		✓	G.ZARCADOOLAS 8-9-66 WM 8-10		
B	1	1.00					✓	LEO280-327	FOR -13 ADDED QUALIFICATION TEST EFF.	QUAL TEST	NOT	REQ'D	J.BISCALDI 10-21-68	BC 10-21-68	
	2	1.00					✓	LEO280-365	ON-11 ADDED QUAL TEST	QUAL TEST					
	3	1.00					✓	LEO280-375	FOR -11 & -13 ADDED LM-3(33) THRU LM-15(45) EFF	LM-3 THRU LM-15					
	4	1.00					✓	LEO280-506 LCD19-1124	ADDED PA-1(47) TO -11 & -13	PA-1					
	5	1.00					✓	LEO280-737 LCD 2104	FOR -11 & -13 ADDED QUAL TEST (70) REQUIREMENTS	QUAL TEST (70)					

Ⓕ

CHG APPROVED

LTR	GROUP LDR	VEH DSGN INT	STRUCTURES	STRUCTURES	WEIGHTS					
A										
B										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11001	B

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

LDW280-11002 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	LEM-2(32)	1
LEM	LDW280-28159	LEM-1(31)	1
LEM	LDW280-28159	LTA-8(18)	1
PART NO. LDW280-11002-15		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	LEM-2(32)	5 EA
LEM	LDW280-28159	LEM-1(31)	5 EA
LEM	LDW280-28159	LTA-8(18)	5 EA
PART NO. LDW280-11002-11ε-13		GAEC SCH NO. 30	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A			
LAST DASH NO. USED	-15	PRIM NO.	215		
		LE(001)	MF-A	8-8-6	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ± .020 ± 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	R. WOOD		
LAYOUT BY	R. WOOD		
CHECKED BY	AC(A)		
GR LEADER	P. HENTON 4/16/66		
VEH DES INT	L. PAULSRUD 4/16/66		
STRUCTURES	A.P. & F. BUNCE	PROJ ENGR	J. ALBER 4/19/66
STRUCTURES	R. HILDERMAN 4/16/66	REL GROUP	C. BOTTI 4/21/66
WEIGHTS	D. ROBESCH 4/19/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

STIFFENER
THERMAL SHIELD ASCENTSTAGE-MID.SECT.
PROPELLANT TANK L.H. AFT.

SIZE	CODE IDENT NO.		
B	26512	LDW280-11002	A
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 12-65

SUPERSEDES LDW280-11059 NO CHANGE 4-21-66

Q 1

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
									RETRACE NO CHANGE - LAST REV. NO CHANGE SH 1OF 4 WAS SH 1OF3 A. MONTEMAGNO 7-26-66 ADDED SH 1.10						
A	1	1.00, 1.10 2.00 & 3.00		DCRF 323-1078					IN MODEL BLOCK REMOVED LEM-3(33) LEM-4(34) LEM-5(35) & LEM-6(36)	LEM-3 THRU LEM-6		✓	MONTEMAGNO 7-26-66		

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11002	A
SCALE NONE			SHEET 1.10

ENG 77.3 5-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11059-15	E	STIFFENER	AL ALLOY SH	QQ-A-250/13	7075 CLAD	.020X1 1/2X5 5/8	-T6	88	
								LDW280-11059-13	E	STIFFENER	AL ALLOY SH	QQ-A-250/13	7075 CLAD	.025X1 1/2X5 5/8	-T6	88	
								LDW280-11059-11	E	STIFFENER	AL ALLOY SH	QQ-A-250/13	7075 CLAD	.020X1 1/2X5 5/8	-T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP 14-9030
						-T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

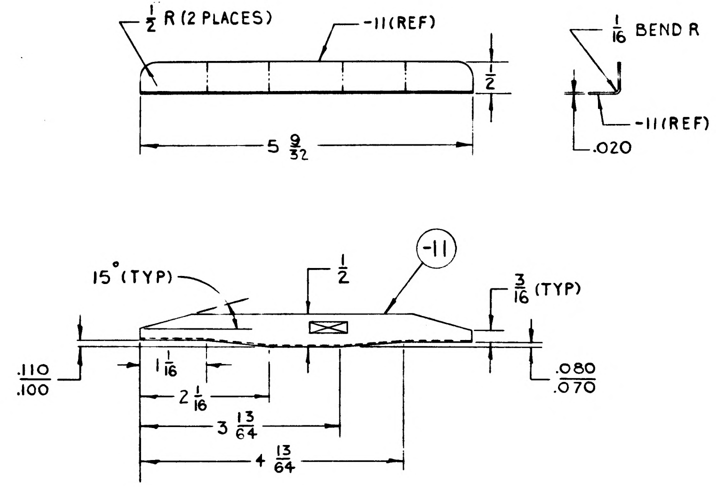
SIZE	CODE IDENT NO.		
B	26512	LDW280-11002	A

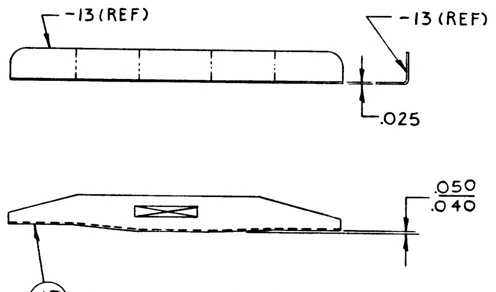
SCALE NONE SHEET 2.00

01

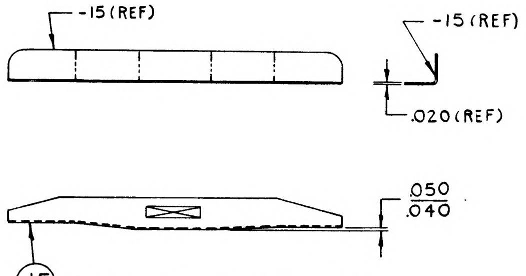
NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.





-13 IDENTICAL TO -11 EXCEPT AS SHOWN



-15 IDENTICAL TO -11 EXCEPT AS SHOWN

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
LEM	SIZE D	CODE IDENT NO. 26512	LDW280-11002	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. ___ EO NO. ___
CONTROL INFO NO ___

DWG. NO.	DASH NO.*	TITLE	CHANGE NO	NEXT ASSEMBLY (SEE MODULE)	REQUIREMENTS	NUMBER REQD.
LDW280-10[illegible] ✓	-15	SEE DWG.	B1	LDW280-28159	ADD QUAL. TEST TO EFF.	1
LDW280-10898 ✓	-15		B1			
	-17					
LDW280-10985 ✓	-15		B1			
	-17					
LDW280-10986 ✓	-15		B2			
	-17					
LDW280-10987 ✓	-11		B2			
	-13					
	-15					
	-17					
	-19					
LDW280-10989 ✓	-15		B1			
	-17					
LDW280-10990 ✓	-15		C1			
	-17					
	-23					
	-25					
LDW280-1[illegible] ✓	-17		C3			
	-23					
	-25					
	-27					
	-29					
	-30					
LDW280-10992 ✓	-13		C2			
	-15					
	-17					
	-21					
LDW280-10993 ✓	-15		C1			
	-17					
	-19					
	-21					
	-23					
LDW280-10994 ✓	-16		B3			
	-17					
LDW280-10995 ✓	-17		B1			
LDW280-10996 ✓	-13		B1			
LDW280-10997 ✓	-11		B1			
LDW280-11000 ✓	-15 -17 -19 -21		B1			
LDW280-11001 ✓			B1			
	-13					1
LDW280-11002 ✓	-11		B1			5
	-13					5
	-15					5
LDW280-11003	-17		B1			6
	-19					6
	-21					6
	-23					
LDW280-11007	-11		B1			1
	-13					
LDW280-11012	-11		C1			
	-15					
	-17					
	-19	SEE DWG.		LDW280-28159	ADD QUAL. TEST TO EFF.	

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO | DESCRIPTION OF EO | GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO	DRAWING CHANGE REQD: REVISE DWG / RECORD EO	DISPOSITION OF PARTS: REWORK / SCRAP	APPROVED BY / DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY | DRAWING TITLE | DRAWING NO. | EO NO.

ISSUED BY ________ SECTION ________ GROUP NO. ________

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

EO NO. LE0280 EO NO. 327
CONTROL INFO NO. LDW280A0538

DWG. NO.	DASH NO.*	TITLE	CHANGE NO.	NEXT ASSEMBLY	REQUIREMENTS	NUMBER REQD.
LDW280-11194	-11	SEE DWG.	B2	LDW280-28159	ADD QUAL. TEST TO EFF.	1
LDW280-11331	-11		A1	LDW280-28378		1
	-13			-28378		1
LDW280-28378	-1		A1	LDW280-28159		1
LDW280M10604	-1		B4	-28159		2
	-7			-28162		2
LDW280M10605	-1		B2	-28159		1
LDW280M10606	-3-1		B3	-28159		
LDW280M10609	-5		B3	-28159		
LDW280M10610	-3		B4	-28159		
LDW280M10869	-3		B4	LDW280-28159		
	-4			-28159		
LDW280M10902	-1		A1	-28150		
LDW280M10905	-1		A2	-28159		
LDW280M10952	-3		B1	-28159		
LDW280M10955	-1		A1			
LDW280M10956	-1		A1			
LDW280M10969	-1		B2			
LDW280M10977	-1		A2	-28159		
LDW280M10940	-1		B2	-28153		
LDW280M10975	-1		A2	-28153 -51153		
LDW280-11004	-11		B1	-28159		4
	-13					4
	-15					4
LDW280-11006	-15		B1	LDW280-28159	ADD QUAL TEST TO EFF.	1
	-13	SEE DWG.				1
	-17					1
	-19					1
	-21					1
	-23					1

FOR THE PRECEEDING DRAWINGS: ADD QUALIFICATION TEST EFFECTIVITY FOR DASH NO'S * NOTED.

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑

REASON FOR EO: TO ADD QUALIFICATION TEST

DESCRIPTION OF EO: FOR - * ADDED QUALIFICATION TEST EFFECTIVITY

GAEC EO RELEASE: 10/12

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO	SUB CONTR UNIT NO	DRAWING CHANGE REQD: REVISE DWG / RECORD EO	DISPOSITION OF PARTS: REWORK / SCRAP	APPROVED BY / DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
LM		NOTED		✓	NOT REQD	10-10-66 / 10/11			10/11	10/11		10/12	10/12/66

PRIORITY: C
DRAWING TITLE: SEE DWG.
DRAWING NO.: LE0280
EO NO.: 327

ISSUED BY GM GREEN X7335 SECTION VEH. DES. INT GROUP NO. 335 PL 35 EMP

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LEO 280
EO NO. 506
CONTROL INFO NO. LDW280A-5718

TO THE FOLLOWING DWG'S LISTED BELOW, ADD PA-1(W5) EFFECT

DWG Nº	** DASH Nº	REQ'D/MOD	DWG TITLE	N/A	CHG Nº
LDW280-10987	-11	1	SEE DWG	LDW280-53159	B4
10989	-15, -17	1 EA			B4
10991	-27, -29, -30	1 EA			C5
10992	-21, -23	1 EA			C5
10994	-19	1			B5
10995	-11	1			B3
10996	-11	1			B5
11001	-11, -13	1 EA			B4
11002	-11 -13	7 1			B3
11003	-19, -21	3 EA			B4
11004	-11 -13 -15	4 6 2			B3
11005	-11 -17 -19	5 2 1			B3
11007	-11, -13	1 EA			B3
11012	-11	1			C3
11210	-11	1			A1
11211	-17	1			A2
11212	-13	1			A2
11213	-11, -13, -15, -17, -19	1 EA			A1
11214	-11, -13, -15	1 EA			A1
11215	-11, -13, -15	1 EA			A2
11216	-11, -15	1 EA			A2
11217	-11, -13, -15, -17, -19, -21	1 EA			A2
11218	-11, -13	1 EA			A2
11219	-13-15-17, -21 -19	1 EA 3			A2
11220	-11, -13, -15, -17, -25, -21	1 EA			A2
11221	-13	1			A3
11222	-11 -13	1 3			A2
11223	-11	1			A2
11224	-11, -13, -15 -17, -19	1 EA			A1
11225	-11, -13, -15	1 EA			A1
11226	-11, -13, -15 -19, -21 -17	1 EA 3			A1
11227	-11, -15	1 EA			A2
11228	-11 -15-17, -19, -23	1 2 EA			A2
LDW280-11229	-15, -13	1 EA	SEE DWG	LDW280-53159	A2

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐

LCR 19-1124 5

REASON FOR EO: UPDATE DWG REQ'TS FOR PA-1

DESCRIPTION OF EO: ADDED PA-1(W5) REQ'TS TO **

GAEC C EO RELEASE: 3/11/67

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		PA-1 (W5)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY							
✓		NOT REQ'D		DATE	3/7/67	3/7/67		3/7/67	3/9		3/8/67
REVISE DWG	RECORD EO	REWORK	SCRAP	5	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PROJ ENGRG date: 3-11-67

PRIORITY: C
DRAWING TITLE: NOTED ABOVE
DRAWING NO.: LEO 280
EO NO.: 506

ISSUED BY M SHAPIRO X1153 SECTION VDI GROUP NO. 335 PL 35

01 NAS 9-1100

LDW280-11003 B

PART NO. LDW280-11003-25

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53159	PA-1(47)	2
		QUAL TEST (70)	2
		LM-15(45)	2
		THRU	
LM	LDW280-53159	LM-3(33)	2

PART NO. LDW280-11003-23

GAEC SCH NO. 30-

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28159	LM-2(32)	1
LM	LDW280-28159	LM-1(31)	1
LM	LDW280-28159	LTA-8(18)	1

PART NO. LDW280-11003-21

GAEC SCH NO. 30-

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28159	QUAL TEST (70)	6
LM	LDW280-28159	LM-1(31)	2
LM	LDW280-53159	PA-1(47)	3
	LDW280-53159	QUAL TEST (70)	1
	LDW280-53159	LM-15(45)	2
		THRU	
LM	LDW280-53159	LM-3(33)	2
LM	LDW280-28159	LM-2(32)	2
LM	LDW280-28159	LTA-8(18)	2

LDW280-11003-19

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28159	QUAL TEST (70)	6
LM	LDW280-53159	PA-1(47)	3
	LDW280-53159	QUAL TEST (70)	3
	LDW280-53159	LM-15(45)	3
		THRU	
LM	LDW280-53159	LM-3(33)	3
LM	LDW280-28159	LM-2(32)	3
LM	LDW280-28159	LM-1(31)	3
LM	LDW280-28159	LTA-8(18)	3

PART NO. LDW280-11003-17

GAEC SCH NO. 30-

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28159	QUAL TEST (70)	6
LM	LDW280-28159	LM-2(32)	4
LM	LDW280-28159	LM-1(31)	4
LM	LDW280-28159	LTA-8(18)	4

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	B	B	B	B

LAST SECT LTR USED

LAST DASH NO. USED -25

GRUMMAN REL INFO B

PRIM NO. 215 JK.001) ME-3B-1/6/9

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ± .020 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY R.WOOD
LAYOUT BY A.PFORTSCH
CHECKED BY
GR LEADER P. HENTON 4/16/66
VEH DES INT P. HENTON W. BISCHOFF
STRUCTURES A.P. & F. BUNCE 4/16/66
STRUCTURES R. HILDERMAN 4/16/66
WEIGHTS D. ROBESCH 4/19/66
PROJ ENGR J. ALBER 4/19/66
REL GROUP C. BOTTI 4/21/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

STIFFENER
ASCENT STAGE - MID SECTION
INBOARD L.H. LOWER SHIELDING

SIZE B
CODE IDENT NO. 26512
LDW280-11003 B
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11003 NO CHANGE 4-21-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
									RETRACED NO CHANGE LAST REV. NO CHANGE SH 1 OF 4 WAS SH 1 OF 3 A. MONTEMAGNO 7-29-66						
A	1	1.00, 1.10, 2.00 3.00						DCRF 323-1078	IN MODEL BLOCK REMOVED LEM-3(33) LEM-4(34) LEM-5(35) & LEM-6(36)	LEM-3, LEM-4 LEM-5 & LEM-6		✓	A. MONTEMAGNO 7-29-66 & MULLEN		
	2	1.00, 1.10 2.00 & 3.00		ⓔ					IN FIELD, MODEL BLOCK & B/M ADDED -17, 19, 21 & -23 REMOVED -11 -13 & -15	LTA-8, LEM-1 LEM-2		✓			
B	1	1.00					✓	LEO280-327	FOR -17, -19, -21 & -23 ADDED QUAL TEST EFF.	QUAL TEST (70)	NOT	REQ'D	R. J. PRIZZI 12-18 68		
	2	1.00						LEO280-375	FOR -19, -21 ADDED LM-3(33) THRU LM-15(45) EFF	LM-3 THRU LM-15	NOT	REQ'D			
	3	1.00						LEO280-473	FOR -21, 3 REQ'D WAS 2 REQ'D						
	4	1.00					✓	LEO280-506 LCD 1124	ADDED PA-1(47) REQ' ON -19 & -21.	PA-1 (47)					
	5	1.,2.,3.00				✓		EO B5, LCD 1422	ADDED -25	LM-3 THRU LM-15, PA-1					
	6	1.00					✓	LEO280-737 LCD 2104	FOR -19, -21 & -23 ADDED QUAL TEST REQ'	QUAL TEST					
	7	1.00					✓	LEO280-790	ON INCORP. OF CHG. B6 (REF. LEO280-737) -25 WAS -23. (-23 RESTRICTED TO LTA-8, LM-1 & LM-2, -25 ADDED FOR LM-3 THRU LM-15, PA-1 ON B5.				H.D.		

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-11003	B
SCALE	NONE		SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11003-25	E	STIFFENER	AL ALLOY SH	QQ-A-250/13	ALCLAD 7075	032X1 3/8X5 1/8	T6	88	
		LDW280-11003-23	E	STIFFENER	AL ALLOY SH	QQ-A-250/13	ALCLAD 7075	040X1 3/8X5 1/8	T6	88	
		-21	↕	↕	↕	↕	↕	020X1 1/4X5 1/2	↕	↕	
		-19	↕	↕	↕	↕	↕	020X1 1/4X5 1/2	↕	↕	
		LDW280-11003-17	E	STIFFENER	AL ALLOY SH	QQ-A-250/13	ALCLAD 7075	020X1 1/4X5 1/2	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						-T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-11003
B

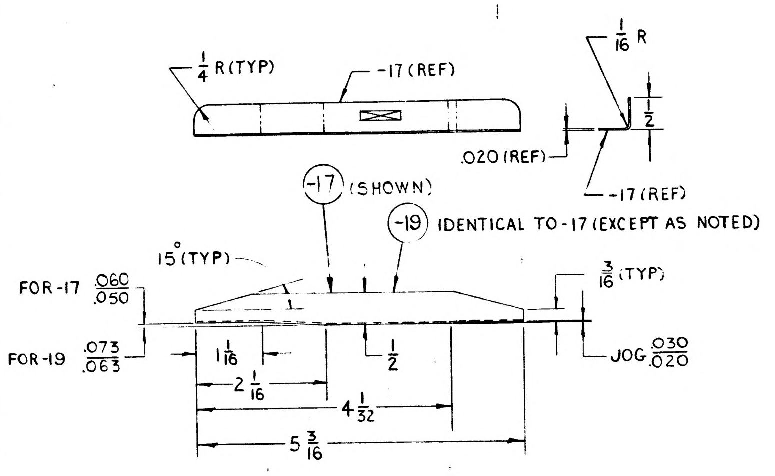
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

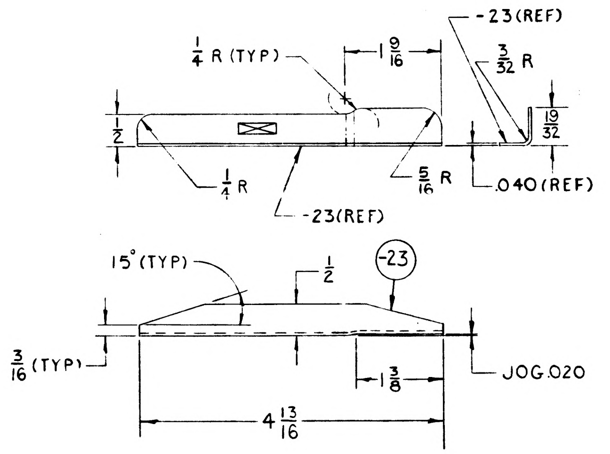
01

NAS 9-1100

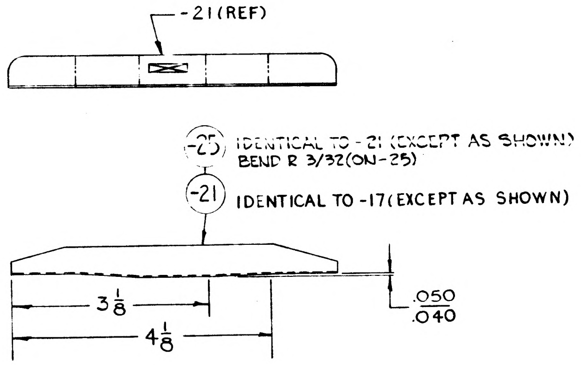
NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.



1/4 R (TYP)
-17 (REF)
1/16 R
1/2
.020 (REF)
-17 (REF)
-17 (SHOWN)
-19 IDENTICAL TO -17 (EXCEPT AS NOTED)
15° (TYP)
3/16 (TYP)
FOR -17 .060/.050
FOR -19 .073/.063
1 1/16
1/2
JOG .030/.020
2 1/16
4 1/32
5 3/16



-23 (REF)
1/4 R (TYP)
1 9/16
3/32 R
1/2
19/32
1/4 R
5/16 R
.040 (REF)
-23 (REF)
15° (TYP)
1/2
-23
3/16 (TYP)
1 3/8
JOG .020
4 13/16



-21 (REF)
-25 IDENTICAL TO -21 (EXCEPT AS SHOWN)
BEND R 3/32 (ON -25)
-21 IDENTICAL TO -17 (EXCEPT AS SHOWN)
3 1/8
4 1/8
.050/.040

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-11003	B
SCALE FULL			SHEET 3.00	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	LEM-2(32)	3
LEM	LDW280-28159	LEM-1(31)	3
LEM	LDW280-28159	LTA-8(18)	3
PART NO. LDW280-11004-15		GAEC SCH NO. 30	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	LEM-2(32)	6
LEM	LDW280-28159	LEM-1(31)	6
LEM	LDW280-28159	LTA-8(18)	6
PART NO. LDW280-11004-13		GAEC SCH NO. 30	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	LEM-2(32)	4
LEM	LDW280-28159	LEM-1(31)	4
LEM	LDW280-28159	LTA-8(18)	4
PART NO. LDW280-11004-11		GAEC SCH NO. 30	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A		
LAST DASH NO. USED	-15	PRIM NO.	VE(001)	
		215	MP-A	8-8-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	B.WOOD-D.FEINER		
LAYOUT BY	A. PFORTSCH		
CHECKED BY	AC		
GR LDR	P.HENTON (ACP) 4-18		
VEH DES INT	W.BISCHOFF 4-18		
STRUCTURES	AP.-JV.-F.BUNCE 4-18	PROJ ENGR	J.ALBER-RC 4-21
STRUCTURES	R.HILDERMAN 4-18	REL GROUP	A.CARAMANICA 4-25
WEIGHTS	D.ROBESCH 4-20		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

STIFFENER
ASCENT STAGE-MID SECT-LOWER
THERMAL SHIELD L.H. OUTBD

SIZE B
CODE IDENT NO. 26512
LDW280-11004 A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 9-64

THIS DWG SUPERSEDES LDW280-11004 NC

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
RETRACED NO CHG. LAST REV NC SH 1 OF 4 WAS 1 OF 3 L. BRIDA 7-26-66															
A	1	1.00		DCRF 3231078					REMOVED LEM-3 THRU LEM-6 (33 THRU 36) EFFECTIVITY FROM -11, -13, & -15	LEM-3 THRU LEM-6		✓	L. BRIDA 7-26-66		
	2	3.00							ADDED 1/16 BR DIM. TO -11.	NOTED	NOT	REQD			

FOR CONTINUATION OF REVISIONS SEE SHEET ________

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-11004	A
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11004-15	E	STIFFENER	AL ALLOY SH	QQ-A-250/13	7075-0 CLAD	.020x4½x1¼	T6	88	7A
		LDW280-11004-13	E	STIFFENER	AL ALLOY SH	QQ-A-250/13	7075-0 CLAD	.020x5x1¼	T6	88	4A
		LDW280-11004-11	E	STIFFENER	AL ALLOY SH	QQ-A-250/13	7075-0 CLAD	.020x4x1¼	T6	88	7C

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	AL HEAT TREAT	MIL-H-6088
88	ANODIZE	LSP-14-903C

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11004	A

SCALE NONE

SHEET 2.00

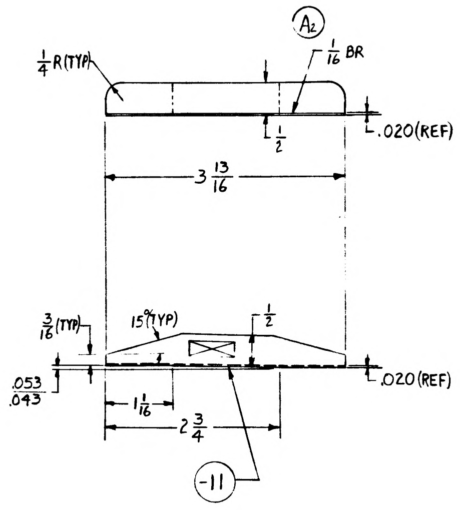
ENG 77.2 7-65

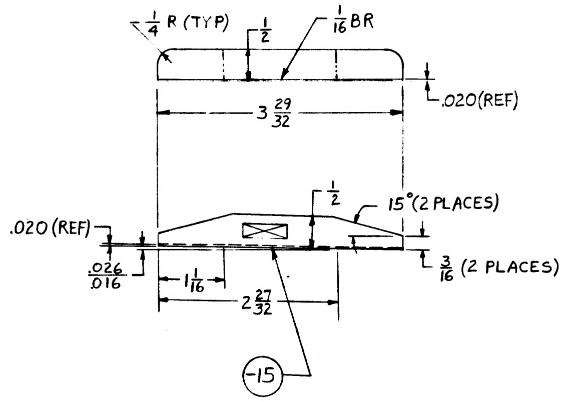
01

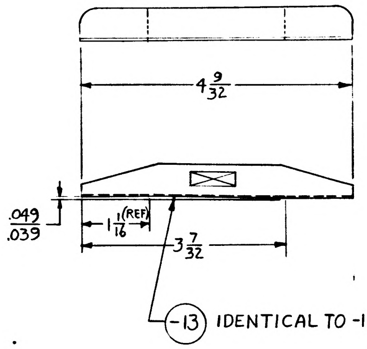
NAS 9-1100

LDW280-11004 A

NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS.


A2
1/4 R(TYP)
1/16 BR
1/2
.020(REF)
3 13/16
3/16(TYP)
15°(TYP)
1/2
.053
.043
.020(REF)
1 1/16
2 3/4
-11


1/4 R (TYP)
1/2
1/16 BR
.020(REF)
3 29/32
1/2
15°(2 PLACES)
.020 (REF)
.026
.016
1 1/16
2 27/32
3/16 (2 PLACES)
-15


4 9/32
.049
.039
1 1/16 (REF)
3 7/32
-13

IDENTICAL TO -11 EXCEPT AS SHOWN

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-11004	A
	SCALE FULL		SHEET 3.00	

LDW280-11004 A

NAS 9-1100

01

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. ___ EO NO. ___
CONTROL INFO NO. ___

DWG. NO.	DASH NO. *	TITLE	CHANGE NO	NEXT ASSEMBLY (PER MODULE)	REQUIREMENTS	NUMBER REQD.
LDW280-10[illegible] ✓	-15	SEE DWG.	B1	LDW280-28159	ADD QUAL TEST TO EFF.	1
LDW280-10898 ✓	-15		B1			
	-17					
LDW280-10985 ✓	-15		B1			
	-17					
LDW280-10986 ✓	-15		B2			
	-17					
LDW280-10987 ✓	-11		B2			
	-13					
	-15					
	-17					
	-19					
LDW280-10989 ✓	-15		B1			
	-17					
LDW280-10990 ✓	-15		C1			
	-17					
	-23					
	-25					
LDW280-1[illegible] ✓	-17		C3			
	-23					
	-25					
	-27					
	-29					
	-30					
LDW280-10992 ✓	-13		C2			
	-15					
	-17					
	-21					
LDW 280-10993 ✓	-15		C1			
	-17					
	-19					
	-21					
	-23					
LDW280-10994 ✓	-16		B3			
	-17					
LDW280-10995 ✓	-17		B1			
LDW280-10996 ✓	-13		B1			
LDW280-10997 ✓	-11		B1			
LDW280-11000 ✓	-15 -17 -19 -21		B1			
LDW280-11001 ✓			B1			
	-13					1
LDW280-11002 ✓	-11		B1			5
	-13					5
	-15					5
LDW2[illegible]-1100 3 ✓	-17		B1			6
	-19					6
	-21					6
	-23					1
LDW280-11007 ✓	-11		B1			
	-13					
LDW280-11012 ✓	-11		C1			
	-15					
	-17					
	-19	SEE DWG.		LDW280-28159	ADD QUAL. TEST TO EFF.	

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY ___ DRAWING TITLE ___ DRAWING NO. ___ EO NO. ___

ISSUED BY ___ SECTION ___ GROUP NO. ___ PL ___

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

EO. NO LE0280 EO NO. 327
CONTROL INFO NO. LDW280A0538

DWG. NO.	DASH NO. *	TITLE	CHANGE NO.	NEXT ASSEMBLY	REQUIREMENTS	NUMBER REQD.
✓ LDW280-11194	-11	SEE DWG.	B2	LDW280-28159	ADD QUAL. TEST TO EFF.	1
✓ LDW280-11331	-11		A1	LDW280 -28378		1
	-13			-28378		
✓ LDW280-28378	-1		A1	LDW280-28159		1
✓ LDW280M10604	-1		B4	-28159		2
	-2			-28162		2
✓ LDW280M10605	-1		B2	-28159		1
✓ LDW280M10606	-3-1		B3	-28159		
✓ LDW280M10609	-5		B3	-28159		
✓ LDW290M10610	-3		C4	-28159		
✓ LDW280M10869	-3		B4	LDW280-28159		
	-4			-28159		
✓ LDW280M10902	-1		A1	-28150		
✓ LDW280M10905	-1		A2	-28159		
✓ LDW280M10952	-3		B1	-28159		
✓ LDW280M10955	-1		A1			
✓ LDW280M10956	-1		A1			
✓ LDW280M10969	-1		B2			
✓ LDW280M10977	-1		A2	-28159		
✓ LDW280M10940	-1		B2	-28153		
✓ LDW280M10975	-1		A2	-28153 -51153		
✓ LDW280-11004	-11		B1	-28159		4
	-13					4
	-15					4
LDW280-11006	-15		B1	LDW280-28159	ADD QUAL TEST TO EFF.	1
	-13	SEE DWG.				1
	-17					1
	-19					1
	-21					1
	-23					1

FOR THE PRECEEDING DRAWINGS: ADD QUALIFICATION TEST EFFECTIVITY FOR DASH NO'S * NOTED.

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
TO ADD QUALIFICATION TEST	FOR - * ADDED QUALIFICATION TEST EFFECTIVITY	16 10/12

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
LM		NOTED		✓		NOT REQD		10/11	10-10-66			10/11	10/11		10-12-66	10/12/66

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DWG.	LE0280	327

ISSUED BY GMGREEN X7035 SECTION VEH. DES. INT GROUP NO. 335 PL 35 EMA

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 506
CONTROL INFO NO. LDW280A-5718

TO THE FOLLOWING DWG'S LISTED BELOW ADD PA-1(W5) EFFECT

DWG №	** DASH №	REQ'D/MOD	DWG TITLE	N/A	CHG №
LDW280-10987	-11	1	SEE DWG	LDW280-53159	B4
10989	-15, -17	1 EA			B4
10991	-27, -29, -30	1 EA			C5
10992	-21, -23	1 EA			C5
10994	-19	1			B5
10995	-11	1			B3
10996	-11	1			B5
11001	-11, -13	1 EA			B4
11002	-11 -13	7 1			B3
11003	-19, -21	3 EA			B4
11004	-11 -13 -15	4 6 2			B3
11005	-11 -17 -19	5 2 1			B3
11007	-11, -13	1 EA			B3
11012	-11	1			C3
11210	-11	1			A1
11211	-17	1			A2
11212	-13	1			A2
11213	-11, -13, -15, -17, -19	1 EA			A1
11214	-11, -13, -15	1 EA			A1
11215	-11, -13, -15	1 EA			A2
11216	-11, -15	1 EA			A2
11217	-11, -13, -15, -17, -19, -21	1 EA			A2
11218	-11, -13	1 EA			A2
11219	-13, -15, -17, -21 -19	1 EA 3			A2
11220	-11, -13, -15, -17, -25, -21	1 EA			A2
11221	-13	1			A3
11222	-11 -13	1 3			A2
11223	-11	1			A2
11224	-11, -13, -15 -17, -19	1 EA			A1
11225	-11, -13, -15	1 EA			A1
11226	-11, -13, -15 -19, -21 -17	1 EA 3			A1
11227	-11, -15	EA			A2
11228	-11 -15, -17, -19, -23	1 2 EA			A2
LDW280-11229	-15, -13	EA	SEE DWG	LDW280-53159	A2

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐	LCR 19-1124	5

REASON FOR EO
UPDATE DWG REQ'TS FOR PA-1

DESCRIPTION OF EO
ADDED PA1(W5) REQ'TS
TO **

GAEC C EO RELEASE
JK 3/11/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		PA-1 (W5)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓ REVISE DWG	RECORD EO	NOT REQ'D REWORK	SCRAP

APPROVED BY		M. A.							AC
DATE	3/7/67	3/7/67			3/7/67	3/7		3/8/67	3-11-67
5	VDI	SUPPORT	RELIAB. GROUP		GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY C
DRAWING TITLE NOTED ABOVE
DRAWING NO. LEO 280
EO NO. 506

ISSUED BY M SHAPIRO X1153 SECTION VDI GROUP NO. 335 PL 35

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280 | EO NO. 1488
CONTROL INFO NO. LDW280B8212

FOR THE FOLLOWING DWGS (*) [redacted]

REMOVE [redacted] LM-15 (45): EFF.

DRAWING Nº (*)	** DASH Nº	[redacted]	TITLE	NEXT ASSEMBLY	CHANGE Nº
LDW280-11004 ✓	-11 -13 -15	[redacted]	SEE DWG	LDW280-53159	B5
-11005	-11 -17 -19	[redacted]			B5
-11211	-21	[redacted]			B1
-11007	-11 -13	[redacted]			B5
-10996	-11	[redacted]			C1
-11012	-11	[redacted]			C5
-11798	-11-13	[redacted]			B1
-11210	-13	[redacted]			B1
-11212	-15	[redacted]			B1
LDW280-11213	-11-13-15-17-19	[redacted]	SEE DWG	LDW280-53159	A3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD #3587 [redacted] PKG 13 PG. 9 #10 (15)

REASON FOR EO: CONFIGURATION CHANGE TO LM-15

DESCRIPTION OF EO: FOR [redacted] (*-**) [redacted]) REMOVED [redacted] LM-15 (45) EFF.

GAEC EO RELEASE: 7-17-69, 7/17/69

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK SCRAP ✓

APPROVED BY — DATE: 7/8/69; SUPPORT; RELIAB GROUP; GROUP LEADER; STRESS GROUP; LIAISON ENGRG; PROJ ENGRG 7/10/69; 7-26-69

PRIORITY: C
DRAWING TITLE: SEE DRAWING
DRAWING NO.: LEO-280
EO NO.: 1488

7-15-69
ISSUED BY GEO. W. ROCKLEIN X86048 6/25/69 (ML) SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

PART NO. LDW280-11005-21

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	LEM-2(32)	1
LEM	LDW280-28159	LEM-1(31)	1
LEM	LDW280-28159	LTA-8(18)	1

PART NO. LDW280-11005-17 & -19

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	LEM-2(32)	2 EA
LEM	LDW280-28159	LEM-1(31)	2 EA
LEM	LDW280-28159	LTA-8(18)	2 EA

PART NO. LDW280-11005-11

GAEC SCH NO. 30

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	LEM-2(32)	6
LEM	LDW280-28159	LEM-1(31)	6
LEM	LDW280-28159	LTA-8(18)	6

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED

LAST DASH NO. USED -21

GRUMMAN REL INFO A

PRIM NO.	4E(001)		
215	MP-A	8-11-6	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY	BOB WOOD ✓		
LAYOUT BY			
CHECKED BY			
GR LEADER	P. HENTON 4/18		
VEH DSGN INT	W. BISCHOFF 4/18		
STRUCTURES	J.V. F.E.B. 4/18	PROJ ENGR	J. ALBER R.C. 4/21
STRUCTURES	R. HILDERMAN 4/18	REL GROUP	A. CARAMANICA 4/25
WEIGHTS	D. ROBESCH 4/20		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

STIFFENER
ASCENT STAGE-MID SECT.-LOWER
THERMAL SHIELD-LH FWD

SIZE B

CODE IDENT NO. 26512

LDW 280-11005 A

SCALE NONE

SHEET 1.00 OF 4

ENG 77.1 9-64

SUPERSEDES LDW280-11005 NC 4/25/66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE-LAST REV NO CHANGE- G.ZARCADOOLAS 8/3/66 ADDED SH 1.10-SH 1.00 OF 4 WAS SH 1.00 OF 3						
A	1	1.00, 2.00 & 3.00						E0A1	CREATED -17, -19 & -21 - & DELETED -13 & -15 - REVISED QUANTITY REQD PER MODULE OF -11 (5 REQD WAS 8)	NOTED		-13 & -15	G ZARCADOOLAS 8-3-66 EG		
	2			DCRF 323-1078					REVISED EFF OF -11, -19 & -21 FROM LTA-8, LEM-1 THRU LEM-6 TO LTA-8, LEM-1 & LEM-2	NOTED	NOT	REQD			
	3	1.00		Ⓔ					REVISED QUANTITY REQD PER MODULE OF -11 FROM 5 TO 6 & -21 FROM 2 TO 1 REQD - REVISED EFF OF -17 FROM LTA-8, LEM-1 THRU LEM-6 TO LTA-8, LEM-1 & LEM-2	NOTED		-21			

CHG APPROVED LTR	GROUP LDR	VEH DSGN INT	STRUCTURES	STRUCTURES	WEIGHTS
A					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11005	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11005-21	E	STIFFENER	AL ALY SH	QQ-A-250/13	7075 ALCLAD	.025X1¼X6	T6	88	3B
		-19						.025X1¼X6	T6	88	7B
		-17						.025X1¼X6	T6	88	7C
		LDW280-11005-11	E	STIFFENER	AL ALY SH	QQ-A-250/13	7075 ALCLAD	.020X1¼X6	T6	88	7C

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030
T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11005	A

SCALE NONE

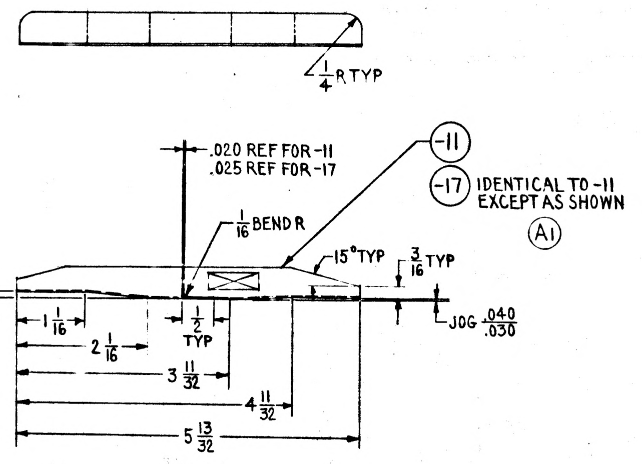
SHEET 2.00

ENG 77.2 7-65

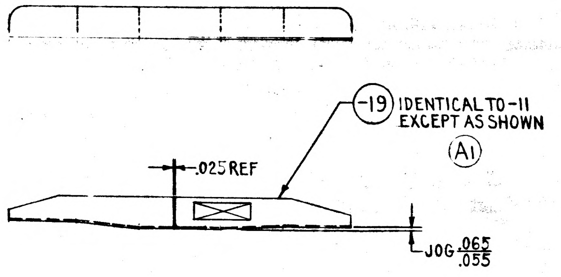
01

NAS 9-1100

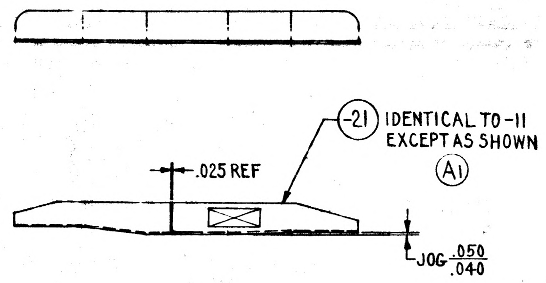
NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS



1/4 R TYP
.020 REF FOR -11
.025 REF FOR -17
-11
-17 IDENTICAL TO -11
EXCEPT AS SHOWN
A1
1/16 BEND R
15° TYP
3/16 TYP
JOG .110/.100
JOG .040/.030
1 1/16
2 1/16
1/2 TYP
3 11/32
4 11/32
5 13/32



-19 IDENTICAL TO -11
EXCEPT AS SHOWN
A1
.025 REF
JOG .065/.055



-21 IDENTICAL TO -11
EXCEPT AS SHOWN
A1
.025 REF
JOG .050/.040

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
D	26512	LDW280-11005	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LEO 280
EO NO. 506
CONTROL INFO NO. LDW280A-5718

TO THE FOLLOWING DWG'S LISTED BELOW. ADD PA-1(W5) EFFECT

DWG Nº	** DASH Nº	REQ'D/MOD	DWG TITLE	N/A	CHG Nº
LDW280-10987	-11	1	SEE DWG	LDW280-53159	B4
10989	-15,-17	1EA			B4
10991	-27,-29,-30	1EA			C5
10992	-21,-23	1EA			C5
10994	-19	1			B5
10995	-11	1			B3
10996	-11	1			B5
11001	-11,-13	1EA			B4
11002	-11 -13	7 1			B3
11003	-19,-21	3EA			B4
11004	-11 -13 -15	4 6 2			B3
11005	-11 -17 -19	5 2 1			B3
11007	-11,-13	1EA			B3
11012	-11	1			C3
11210	-11	1			A1
11211	-17	1			A2
11212	-13	1			A2
11213	-11,-13,-15-17,-19	1EA			A1
11214	-11,-13,-15	1EA			A1
11215	-11,-13,-15	1EA			A2
11216	-11,-15	1EA			A2
11217	-11,-13,-15, -17,-19,-21	} 1EA			A2
11218	-11,-13	1EA			A2
11219	-13-15-17,-21 -19	1EA 3			A2
11220	-11,-13,-15, -17,-25-21	} 1EA			A2
11221	-13	1			A3
11222	-11 -13	1 3			A2
11223	-11	1			A2
11224	-11,-13,-15 -17,-19	} 1EA			A1
11225	-11,-13,-15	1EA			A1
11226	-11,-13,-15 -19,-21 -17	} 1EA 3			A1
11227	-11,-15	1EA			A2
11228	-11 -15-17,-19,-23	1 2 EA			A2
LDW280-11229	-15,-13	1EA	SEE DWG	LDW280-53159	A2

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐ LCR 19-1124 5

REASON FOR EO: UPDATE DWG REQ'TS FOR PA-1

DESCRIPTION OF EO: ADDED PA-1(W5) REQ'TS TO **

GAEC C EO RELEASE: 3/11/67

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		PA-1 (W5)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQD (REWORK / SCRAP)

APPROVED BY	5	VDI	SUPPORT THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
DATE		3/7/67	3/7/67		3/7/67	3/7		3/8/67	3-11-67

PRIORITY: C
DRAWING TITLE: NOTED ABOVE
DRAWING NO.: LEO 280
EO NO.: 506

ISSUED BY M SHAPIRO X1153 SECTION VDI GROUP NO. 335 PL 35

01
NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280
EO NO. 1488
CONTROL INFO NO. LDW280B8212

FOR THE FOLLOWING DWGS (*) [redacted]

REMOVE [redacted] LM-15 (45): EFF.

DRAWING № (*)	** DASH №	[redacted]	TITLE	NEXT ASSEMBLY	CHANGE №
LDW280-11004 ✓	-11 13 15	[redacted]	SEE DWG	LDW 280-53159	B5
-11005 ✓	-11 17-19	[redacted]			B5
-11211	-21	[redacted]			B1
-11007	-11 13	[redacted]			B5
-10996	-11	[redacted]			C1
-11012	-11	[redacted]			C5
-11798	-11-13	[redacted]			B1
-11210	-13	[redacted]			B1
-11212	-15	[redacted]			B1
LDW280-11213	-11-13-15-17-19	[redacted]	SEE DWG	LDW280-53159	A3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD #3587 [redacted] PKG 13 Pg. 9 #10 (5)

REASON FOR EO
CONFIGURATION CHANGE TO LM-15

DESCRIPTION OF EO
FOR [redacted] (*-[redacted] **) REMOVED
[redacted] LM-15 (45) EFF.

GAEC EO RELEASE
7-17-69
JK 7/3?/69

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY							
✓			✓	DATE	7/8/69			7/1?/69	7/1?/69	7/10/69	7-26-69
REVISE DWG	RECORD EO	REWORK	SCRAP		JDT	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY: C
DRAWING TITLE: SEE DRAWING
DRAWING NO.: LEO-280
EO NO.: 1488

7-15-69
ISSUED BY GEO. W. ROCKLEIN X86048 6/25/69 (ML) SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11006 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	LEM-2 (32)	2
LEM	LDW280-28159	LEM-1 (31)	2
LEM	LDW280-28159	LTA-8 (18)	2
PART NO. LDW280-11006-21		GAEC SCH NO. 30-	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	LEM-2 (32)	1 EA
LEM	LDW280-28159	LEM-1 (31)	1 EA
LEM	LDW280-28159	LTA-8 (18)	1 EA
PART NO. LDW280-11006-13, -15, -17, -19, & -23		GAEC SCH NO. 30-	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL^c INFO A	
LAST DASH NO. USED	-23	PRIM NO. 215	LE(001) MD-A 976

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 LINE ITEM #1 DOCUMENTATION TYPE II

DRAWN BY	FEINER	RELIABILITY	
LAYOUT BY			
CHECKED BY			
GR.LEADER	P.HENTON 4/16/66		
VEH DES INT	PAULSRUD 4/16/66		
STRUCTURES	F BUNCE 4/16/66	PROJ ENGR	J. ALBER 4/18/66
STRUCTURES	HILDERMAN 4/16/66	REL GROUP	A.CARAMANICA 4/20
WEIGHTS	D.ROBESCH 4/18/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

PLATE
ASCENT STAGE-MID SECTION
LOWER THERMAL SHIELD

SIZE B CODE IDENT NO. 26512 LDW280-11006 A
SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11006 NC

01 NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
RETRACED NO CHG LAST REV NC									LOFTED DWG WAS DIMENSIONED DWG, ADDED SH. 1.10; SH 1.00 OF 4 WAS 1.00 OF 3.				L.BRIDA 8-20-66		
A	1	1.00		DCRF323-1078					EFF FOR -11 & -13 WAS LTA-8, LEM-1 THRU LEM-6	NOTED		✓	L.BRIDA 8-20-66		
	2	1.00, 1.10, 2.00, 3.00						(R)	DELETED -11, ADDED -15, -17, -19, -21, & -23, ADDED NOTES.	LTA-8 LEM-1, LEM-2.		-11			

CHG APPROVED											
LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY					
A			8/								

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11006	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11006-23	E	PLATE	AL ALLOY SH	QQ-A-250/4	2024-T3	.020 x 1 5/8 x 6 1/8	NONE	88	
		-21				QQ-A-250/5	SEE NOTE 2	.020 x 1 3/8 x 21 7/8	NOTE 3	NOTE 2	
		-19				QQ-A-250/4	2024-T3	.012 x 8 5/8 x 23 3/4	NONE	88	
		-17				QQ-A-250/5	SEE NOTE 2	.020 x 8 5/8 x 21 7/8	NOTE 3	NOTE 2	
		-15				QQ-A-250/5	SEE NOTE 2	.020 x 6 3/8 x 23 3/8	NOTE 3	NOTE 2	
		LDW280-11006-13	E	PLATE	AL ALLOY SH	QQ-A-250/13	ALCLAD 7075-T6	.063 x 2 x 3 1/2	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP 14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11006	A

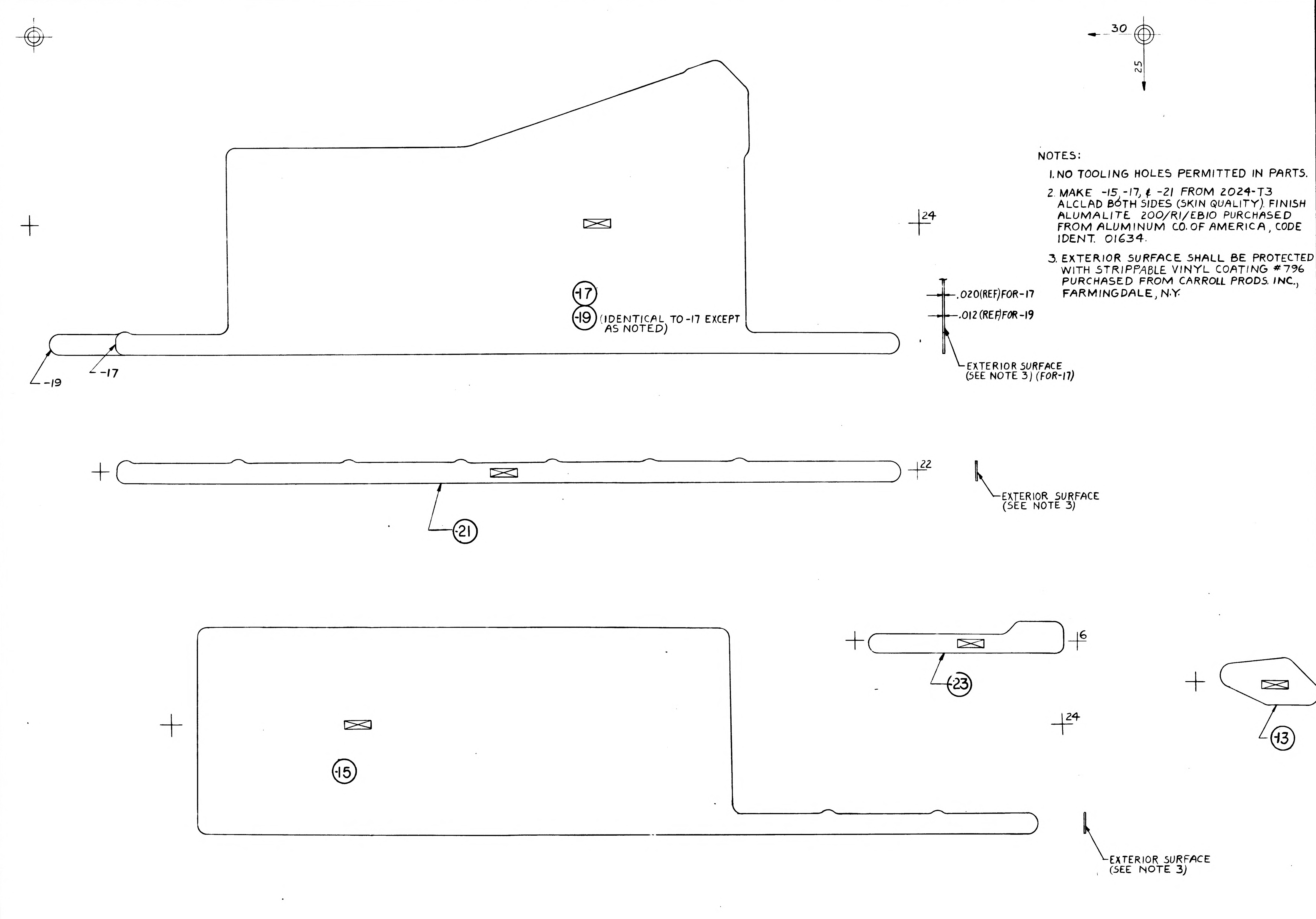
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



8
7
6
5
4
3
2
1
30
25
-17
-19 (IDENTICAL TO -17 EXCEPT AS NOTED)
-19
-17
24
.020(REF)FOR -17
.012 (REF)FOR -19
EXTERIOR SURFACE (SEE NOTE 3) (FOR-17)
22
-21
EXTERIOR SURFACE (SEE NOTE 3)
6
-23
4
24
-13
-15
EXTERIOR SURFACE (SEE NOTE 3)

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. MAKE -15, -17, & -21 FROM 2024-T3 ALCLAD BOTH SIDES (SKIN QUALITY). FINISH ALUMALITE 200/RI/EBIO PURCHASED FROM ALUMINUM CO. OF AMERICA, CODE IDENT. 01634.
3. EXTERIOR SURFACE SHALL BE PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROLL PRODS. INC., FARMINGDALE, N.Y.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	√

LDW280-11006 A

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LEM MODEL OR END ITEM	SIZE F	CODE IDENT NO. 26512	LDW280-11006 A
	SCALE FULL		SHEET 3.00

FOR PHOTO REPRODUCTION K2

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO	
EO NO.	
CONTROL INFO NO	

DWG. NO.	DASH NO. *	TITLE	CHANGE NO	NEXT ASSEMBLY (SEE MODULE)	REQUIREMENTS	NUMBER REQD.
LDW280-10[illegible] ✓	-15	SEE DWG.	B1	LDW280-28159	ADD QUAL TEST TO EFF.	
LDW280-10898 ✓	-15 -17		B1			
LDW280-10985 ✓	-15 -17		B1			
LDW280-10986 ✓	-15 -17		B2			
LDW280-10987 ✓	-11 -13 -15 -17 -19		B2			
LDW280-10989 ✓	-15 -17		B1			
LDW280-10990 ✓	-15 -17 -23 -25		C1			
LDW280-10[illegible] ✓	-17 -23 -25 -27 -29 -30		C3			
LDW280-10992 ✓	-13 -15 -17 -21		C2			
LDW280-10993 ✓	-15 -17 -19 -21 -23		C1			
LDW280-10994 ✓	-16 -17		B3			
LDW280-10995 ✓	-17		B1			
LDW280-10996 ✓	-13		B1			
LDW280-10997 ✓	-11		B1			
LDW280-11000 ✓	-15 -17 -19 -21		B1			
LDW280-11001 ✓	-13		B1			1
LDW280-11002 ✓	-11 -13 -15		B1			5 5 5
LDW2[illegible]-11003 ✓	-17 -19 -21 -23		B1			6 6 6
LDW280-11007 ✓	-11 -13		B1			1
LDW280-11012 ✓	-11 -15 -17 -19	SEE DWG.	C1	LDW280-28159	ADD QUAL. TEST TO EFF.	

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☐	
REASON FOR EO			DESCRIPTION OF EO			GAEC EO RELEASE
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG / RECORD EO	DISPOSITION OF PARTS: REWORK / SCRAP	APPROVED BY / DATE: SUPPORT, RELIAB GROUP, GROUP LEADER, STRESS GROUP, LIAISON ENGRG, PROJ ENGRG, GOVT
				PRIORITY	DRAWING TITLE	DRAWING NO. / EO NO.

ISSUED BY_____ SECTION_____ GROUP NO._____ PL_____

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

EO. NO	LE0280
EO NO.	327
CONTROL INFO NO.	LDW280A0538

DWG. NO.	DASH NO. *	TITLE	CHANGE NO.	NEXT ASSEMBLY	REQUIREMENTS	NUMBER REQD.
LDW280-11194	-11	SEE DWG	B2	LDW280-28159	ADD QUAL TEST TO EFF.	1
✓ LDW280-11331	-11 -13		A1	LDW280-28378 -28378		
✓ LDW280-28378	-1		A1	LDW280-28159		1
✓ LDW280M10604	-1 -2		B4	-28159 -28162		2 2
✓ LDW280M10605	-1		B2	-28159		1
✓ LDW280M10606	-3-1		B3	-28159		
✓ LDW280M10609	-5		B3	-28159		
✓ LDW280M10610	-3		C4	-28159		
✓ LDW280M10869	-3 -4		B4	LDW280-28159 -28159		
✓ LDW280M10902	-1		A1	-28150		
✓ LDW280M10905	-1		A2	-28159		
✓ LDW280M10952	-3		B1	-28159		
✓ LDW280M10955	-1		A1			
✓ LDW280M10956	-1		A1			
✓ LDW280M10969	-1		B2			
✓ LDW280M10977	-1		A2	-28159		
✓ LDW280M10940	-1		B2	-28153		
✓ LDW280M10975	-1		A2	-28153 -51153		
✓ LDW280-11004	-11 -13 -15		B1	-28159		4 4 4
✓ LDW280-11006	-15 -13 -17 -19 -21 -23	SEE DWG.	B1	LDW280-28159	ADD QUAL TEST TO EFF.	1 1 1 1 1 1

FOR THE PRECEEDING DRAWINGS: ADD QUALIFICATION TEST EFFECTIVITY FOR DASH NO'S * NOTED.

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐	
REASON FOR EO: TO ADD QUALIFICATION TEST			DESCRIPTION OF EO: FOR - * ADDED QUALIFICATION TEST EFFECTIVITY			GAEC EO RELEASE: 10/2[illegible]
MODEL: LM	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.: NOTED	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG ✓ / RECORD EO	DISPOSITION OF PARTS: NOT REQD	APPROVED BY / DATE: 10-10-66; 10/11; GROUP LEADER 10/11; STRESS GROUP 10/11; PROJ ENGRG 10/[illegible]; GOVT 10/12/66
				PRIORITY: C	DRAWING TITLE: SEE DWG.	DRAWING NO.: LE0280 / EO NO.: 327

ISSUED BY G.W. GREEN X7035 SECTION VEH. DES. INT GROUP NO. 335 PL 35 EMP

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ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512 *
ENGINEERING ORDER

DWG. NO. LDW280-11006
EO NO. B2
CONTROL INFO NO. LM-3-3889

NOTE 2: MAKE -15, -17 & -21 FROM...
(ADD) ALODINE FIN 76 INTERIOR SIDE.

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☐

REASON FOR EO: FINISH FOR INTERIOR SIDE NOT CALLED OUT.

DESCRIPTION OF EO: TO NOTE 2 ADDED ALODINE FIN 76 INTERIOR SIDE.

GAEC EO RELEASE: 3 UC

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8(18)	LM-1(31)
LM		LM-2(32	
		QUAL TEST (72)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO ☐

DISPOSITION OF PARTS: REWORK ✓ SCRAP ☐

APPROVED BY		V.J.L.			BM			
DATE	11/15/66	11/16		11/14	10-26-66	10-27-66	10-26-66	10-27-66
10/26/66		~~SUPPORT~~ THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	CONT

PRIORITY: C3

DRAWING TITLE: PLATE A/S - MID. SECT. LWR - THER. SH.

DRAWING NO.: LDW280-11006

EO NO.: B2

ISSUED BY J. KOSLOSKI X2151 SECTION Y.D.1 GROUP NO. 335 PL 35

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NAS 9-1100

LDW280-11007 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	LEM-2(32)	1EA
LEM	LDW280-28159	LEM-1(31)	1EA
LEM	LDW280-28159	LTA-8(18)	1EA
PART NO. LDW280-11007-11 & -13		GAEC SCH NO. 30	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -13

GRUMMAN REL INFO A

PRIM NO.	LE(001)	
215	MP-A	8-11-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	FEINER		
LAYOUT BY			
CHECKED BY	JR PA		
GR LEADER	P HENTON 4/16/66		
VEH DSGN INT	PAULSRUD 4/16/66		
STRUCTURES	AJP JV FEB 4/16/66	PROJ ENGR	J ALBER R.C. 4/18/66
STRUCTURES	HILDERMAN 4/16/66	REL GROUP	A.CARAMANICA 4/20/66
WEIGHTS	D. ROBESCH 4/18/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP
-Y80.25-ASCENT STAGE-MID SECT.
LOWER THERMAL SHIELD

SIZE B
CODE IDENT NO. 26512
LDW280-11007 A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11007 NO CHGE 4/20/66

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NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
									RETRACED NO CHANGE-LAST REV NO CHANGE- G.ZARCADOOLAS 8-5-66						
									ADDED SH 1.10 - SH 1.00 OF 4 WAS SH 1.00 OF 3						
A	1	1.00		DCRF 323-1078 ✓				Ⓡ	REVISED EFF OF -11 & -13 FROM LTA-8 & LEM-1 THRU LEM-6 TO LTA-8, LEM-1 & LEM-2	NOTED	NOT	REQD	G.ZARCADOOLAS 8-5-66 MULLER		

CHG APPROVED LTR	GROUP LDR	VEH DSGN INT	STRUCTURES	STRUCTURES	WEIGHTS					
A										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11007	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11007-13	E	CLIP	AL ALY SH	QQ-A-250/13	7075 ALCLAD	.063 X 3/4 X 3	T6	88	
								LDW280-11007-11	E	CLIP	AL ALY SH	QQ-A-250/13	7075 ALCLAD	.063 X 3/4 X 3	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11007	A
SCALE NONE		SHEET 2.00	

ENG 77.2 7-65

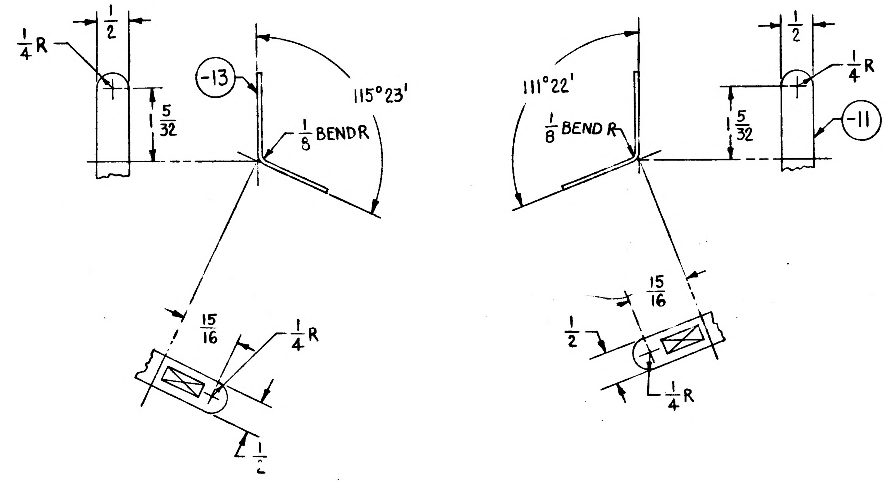
01

NAS 9-1100

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY ✓

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS



1/4 R
1/2
5/32
-13
115°23'
1/8 BEND R
15/16
1/4 R
1/2
111°22'
1/8 BEND R
1/2
1/4 R
5/32
-11
15/16
1/2
1/4 R

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
	SIZE C	CODE IDENT NO. 26512	LDW280-11007	A
LEM				
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

LDW280-11007A

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. ____ EO NO. ____
CONTROL INFO NO ____

DWG. NO.	DASH NO. *	TITLE	CHANGE NO	NEXT ASSEMBLY (PER MODULE)	REQUIREMENTS	NUMBER REQD.
LDW280-10[illegible] ✓	-15	SEE DWG.	B1	LDW280-28159	ADD QUAL. TEST TO EFF.	1
LDW280-10898 ✓	-15 -17		B1			
LDW280-10985 ✓	-15 -17		B1			
LDW280-10986 ✓	-15 -17		B2			
LDW280-10987 ✓	-11 -13 -15 -17 -19		B2			
LDW280-10989 ✓	-15 -17		B1			
LDW280-10990 ✓	-15 -17 -23 -25		C1			
LDW280-1[illegible] ✓	-17 -23 -25 -27 -29 -30		C3			
LDW280-10992 ✓	-13 -15 -17 -21		C2			
LDW280-10993 ✓	-15 -17 -19 -21 -23		C1			
LDW280-10994 ✓	-16 -17		B3			
LDW280-10995 ✓	-17		B1			
LDW280-10996 ✓	-13		B1			
LDW280-10997 ✓	-11		B1			
LDW280-11000	-15 -17 -19 -21		B1			
LDW280-11001 ✓	-13		B1			1
LDW280-11002 ✓	-11 -13 -15		B1			5 5 5
LDW2[illegible]-11003 ✓	-17 -19 -21 -23		B1			6 6 6
LDW280-11007 ✓	-11 -13		B1			1
LDW280-11012	-11 -15 -17 -19	SEE DWG.	C1	LDW280-28159	ADD QUAL TEST TO EFF.	

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY ____ DRAWING TITLE ____ DRAWING NO. ____ EO NO. ____

ISSUED BY ____ SECTION ____ GROUP NO. ____ PL ____

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GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

EO. NO LE0280 EO NO. 327
CONTROL INFO NO. LDW280A0538

DWG. NO.	DASH NO. *	TITLE	CHANGE NO.	NEXT ASSEMBLY	REQUIREMENTS	NUMBER REQD.
LDW280-11194	-11	SEE DWG	B2	LDW280-28159	ADD QUAL. TEST TO EFF.	1
LDW280-11331	-11 -13		A1	LDW280-28378 -28378		
LDW280-28379	-1		A1	LDW280-28159		1
LDW280M10604	-1 -7		B4	-28159 -28162		2 2
LDW280M10605	-1		B2	-28159		1
LDW280M10606	-3-1		B3	-28159		
LDW280M10609	-5		B3	-28159		
LDW280M10610	-3		C4	-28159		
LDW280M10869	-3 -4		B4	LDW280-28159 -28159		
LDW280M10902	-1		A1	-28150		
LDW280M10905	-1		A2	-28159		
LDW280M10952	-3		B1	-28159		
LDW280M10955	-1		A1			
LDW280M10956	-1		A1			
LDW280M10969	-1		B2			
LDW280M10977	-1		A2	-28159		
LDW280M10940	-1		B2	-28153		
LDW280M10975	-1		A2	-28153 -51153		
LDW280-11004	-11 -13 -15		B1	-28159		4 4 4
LDW280-11006	-15 -13 -17 -19 -21 -23	SEE DWG.	B1	LDW280-28159	ADD QUAL TEST TO EFF.	1 1 1 1 1 1

FOR THE PRECEEDING DRAWINGS: ADD QUALIFICATION TEST EFFECTIVITY FOR DASH NO'S * NOTED.

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
TO ADD QUALIFICATION TEST	FOR -* ADDED QUALIFICATION TEST EFFECTIVITY	16 10/2[illegible]

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
LM		NOTED		✓		NOT REQD		10-10-66 / 10/11			10/11	10/11		10/[illegible]	10/12/66

PRIORITY C DRAWING TITLE SEE DWG. DRAWING NO. LE0280 EO NO. 327

ISSUED BY G. Green X7035 SECTION VEH. DES. INT. GROUP NO. 335 PL 35

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ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 506
CONTROL INFO NO. LDW280A-5718

TO THE FOLLOWING DWG'S LISTED BELOW. ADD PA-1(W5) EFFECT

DWG Nº	** DASH Nº	REQ'D/MOD	DWG TITLE	N/A	CHG Nº
LDW280-10987	-11	1	SEE DWG	LDW280-53159	B4
10989	-15, -17	1 EA			B4
10991	-27, -29, -30	1 EA			C5
10992	-21, -23	1 EA			C5
10994	-19	1			B5
10995	-11	1			B3
10996	-11	1			B5
11001	-11, -13	1 EA			B4
11002	-11 -13	7 1			B3
11003	-19 -21	3 EA			B4
11004	-11 -13 -15	4 6 2			B3
11005	-11 -17 -19	5 2 1			B3
11007	-11, -13	1 EA			B3
11012	-11	1			C3
11210	-11	1			A1
11211	-17	1			A2
11212	-13	1			A2
11213	-11, -13, -15, -17, -19	1 EA			A1
11214	-11, -13, -15	1 EA			A1
11215	-11, -13, -15	1 EA			A2
11216	-11, -15	1 EA			A2
11217	-11, -13, -15, -17, -19, -21	1 EA			A2
11218	-11, -13	1 EA			A2
11219	-13, -15, -17, -21 -19	1 EA 3			A2
11220	-11, -13, -15, -17, -25, -21	1 EA			A2
11221	-13	1			A3
11222	-11 -13	1 3			A2
11223	-11	1			A2
11224	-11, -13, -15 -17, -19	1 EA			A1
11225	-11, -13, -15	1 EA			A1
11226	-11, -13, -15 -19, -21 -17	1 EA 3			A1
11227	-11, -15	1 EA			A2
11228	-11 -15, -17, -19, -23	1 2 EA			A2
LDW280-11229	-15, -13	1 EA	SEE DWG	LDW280-53159	A2

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐	LCR 19-1124	5

REASON FOR EO: UPDATE DWG REQ'TS FOR PA-1

DESCRIPTION OF EO: ADDED PA1(W5) REQ'TS TO **

GAEC C EO RELEASE: 3/11/67

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		PA-1 (W5)	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY		M.D.						AC
DATE	3/7/67	3/7/67		3/7/67	3/7		3/8/67	3-11-67
5	VDI							

PRIORITY: C

DRAWING TITLE: NOTED ABOVE

DRAWING NO.: LEO 280

EO NO.: 506

ISSUED BY M. SHAPIRO X1153 SECTION VDI GROUP NO. 335 PL 35

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NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280
EO NO. 1488
CONTROL INFO NO. LDW280B8212

FOR THE FOLLOWING DWGS (*) [redacted]

REMOVE [redacted] LM-15 (45): EFF.

DRAWING № (*)	** DASH № [redacted]		TITLE	NEXT ASSEMBLY	CHANGE №
LDW280 - 11004 ✓	-11 13 15	[redacted]	SEE DWG	LDW 280 - 53159	B5
-11005 ✓	-11 17-19	[redacted]	↓	↓	B5
-11211 ✓	-21	[redacted]			B1
-11007 ✓	-11 13				B5
-10996	-11				C1
-11012	-11				C5
-11798	-11-13	[redacted]			B1
-11210	-13	[redacted]			B1
-11212	-15	[redacted]			B1
LDW280 - 11213	-11-13-15-17-19	[redacted]	SEE DWG	LDW280-53159	A3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD * 3587 [redacted] PKG 13 Pg 9810 (S)

REASON FOR EO
CONFIGURATION CHANGE TO LM-15

DESCRIPTION OF EO
FOR [redacted] (* - * *) [redacted]) REMOVED
[redacted] LM-15 (45) EFF.

GAEC EO RELEASE
Ⓟ NTO
7-17-69
JK 7/?/69

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ☑ RECORD EO ☐
DISPOSITION OF PARTS: REWORK ☐ SCRAP ☑

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	CONT
APPROVED BY								
DATE	7/8/69 VDI						7/10/69	7-26-69

PRIORITY C
DRAWING TITLE SEE DRAWING
DRAWING NO. LEO-280
EO NO. 1488

7-15-69
ISSUED BY GEO. W. ROCKLEIN X86048 6/25/69 (ML) SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01 NAS 9-1100

LDW280-11008 B

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28326	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
LM		LM-6(36)	1
LFM 140		LM-5(35)	1
LFM 140		LM-4(34)	1
LM	LDW280-28326	LM-3(33)	1
PART NO. LDW280-11008-15-1		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28326	QUALTEST(70)	1
LM	LDW280-28326	PA-1 (47)	1
PART NO. LDW280-11008-15		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28326	QUAL.TEST(70)	1
LM	LDW280-28326	LTA-8(18)	1
PART NO. LDW280-11008-13		GAEC SCH NO. 30-	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL^c INFO B	
LAST DASH NO. USED	-15	PRIM NO.	JK(001)
		215	MP-18 7/10/8

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 | LINE ITEM #1 | DOCUMENTATION TYPE II

DRAWN BY	BOB WOOD		
LAYOUT BY	BOB WOOD		
CHECKED BY			
GR LD	P. HENTON 5/5		
V.D.I.	L.PAULSRUD 5/6		
STRUCTURES	APN F.BUNCE 5/6	PROJ ENGR	J.ALBER 5-10
STRUCTURES	HILDERMAN 5/6	REL GROUP	BOTTI 5-11-66
WEIGHTS	D.ROBESCH 5/9		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

WEB
ASCENT STAGE-MID.SECT. LOWER R.H.
ACCESS PANEL-THERMAL SHIELD

SIZE	CODE IDENT NO.		
B	26512	LDW280-11008	B
SCALE	NONE	SHEET 1.00 OF 4	

THIS DWG. SUPERSEDES LDW280-11008 "NO CHANGE" 5-5-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED-NO CHANGE - LAST REV "NO CHANGE- SHT. 1 OF 4 WAS 1 OF 3. LOFTED DWG. WAS DIMENSIONED DWG. A.T. GUERCIA - 7-27-66.						
A	1	3.00	3G				✓	EO A1	IN FIELD FOR-11, 1/2R (TYP EXCEPT AS NOTED) WAS 1.00R	NOTED	✓		GUERCI 7-27-6		
	2	1.00, 1.10 2.00 & 3.00							DELETED -11, ADDED -13	NOTED		-11	RMS Castellan 8-9-66		
B	1	1.10, 2.00 & 3.00					✓	EO B1	FOR-13 2024-T3 WAS 7075-T6 IN MATERIAL CALL OUT & NOTE #1	NOT REQD	NOT	REQD	TWEEDY 5-29-68 H.D.		
	2	1.10 & 3.00						EO B2	ADDED EO TO RECORD BLOCK	LTA-8 (18)	✓				
	3	1.00 & 1.10						EO B3	IN MOD BLK FOR-13 ADDED "QUAL TEST" EFF.	QUAL TEST (70)	NOT	REQD			
	4	1.00 & 1.10						LEO 280-469	ON INCORP OF EO B3 N/A LDW280-28326 WAS LDW280-28236	QUAL TEST (70)	NOT	REQD			
	5	1.00 & 1.10					✓	LEO280 572 LCD-1244	REMOVED LM-1 (31) & LM-2 (32) EFF TO-13	LM-1 (31) & LM-2 (32)		✓			
	6	1.00, 1.10 2.00, 3.00				✓		EO B6 LCD 1244	ADDED-15, EFF LM-3 (33) THRU LM-15 & PA-1 (47); 1 REQD/MODULE ON LDW280-28326	LM-3 (31) THRU LM-15 (45) & PA-1 (47)	NOT	REQD			
	7	1.00 & 1.10					✓	LEO280-875 LCD 2104	FOR-15 ADDED QUAL TEST REQUIREMENTS	QUAL TEST (70)	NOT	REQD			
	8	1.00, 2.00 3.00		LFM 140		✓		EO B8 LCD 2360	IN FLD, L/M & MOD BLK, ADDED-15-1, RESTRICTED-15 TO QUAL TEST & PA-1 WAS LM-3(33) THRU LM-15(45) PA-1(47) & QUAL TEST (70) -15-1 MAY BE MADE BY REWORKING-15	LM-3 (33) THRU LM-15 (45)	NOTED		FAFFO 7-2-68	L.D.	

FOR CONTINUATION OF REVISIONS SEE SHEET ________

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-11008	B
SCALE NONE		SHEET 1.10	

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11008-15-1	E	WEB	AL ALLOY SH	QQ-A-250/12	7075-T6	.020X17 1/8X23 3/8	CM	88	
								LDW280-11008-15	E	WEB	AL ALLOY SH	QQ-A-250/12	7075-T6	.020x17 1/8x23 3/8	CM	38	
								LDW280-11008-13	E	WEB	SEE NOTE I	QQ-A-250/5	2024-T3 ALCLAD	.020X17 1/8X23 3/8	CM	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
CM	CHEM-MILL	LSP14-26100						
76	ALODINE	LSP14-9010						
88	ANODIZE	LSP-14-9030						

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

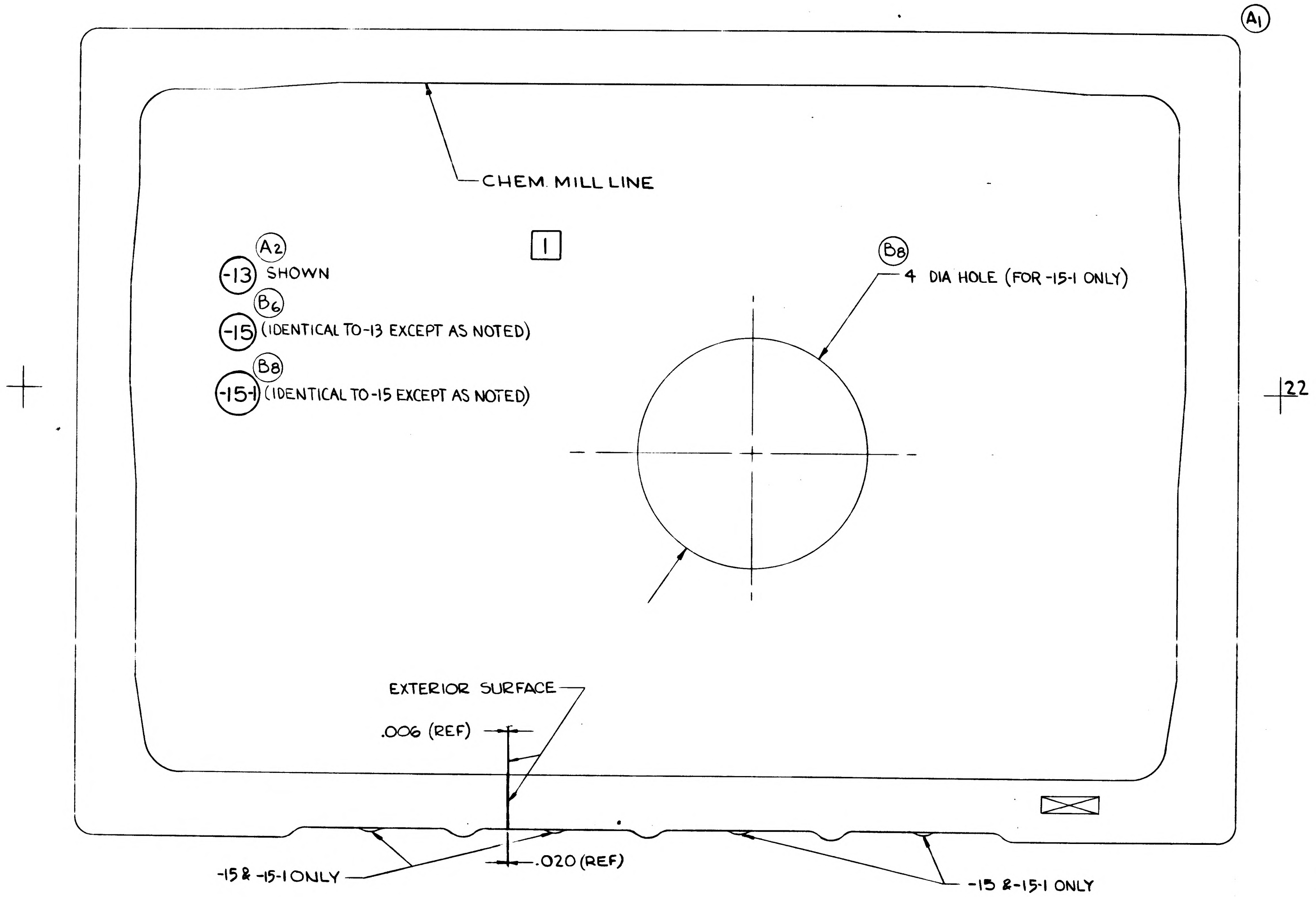
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11008	B
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



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20

NOTES:

1. a) MAKE LDW280-11008-13 FROM 2024T3 ALCLAD (1) SIDE (SKIN QUALITY) FINISH ALUMALITE 200/R1/EB10 WHICH MAY BE PURCHASED FROM ALUMINUM CO. OF AMERICA (CODE IDENT. 01634)
   b) THE SURFACE DESIGNATED "EXTERIOR" SHALL BE PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROLL PRODUCTS INC., FARMINGDALE, N.Y.
   c) REMOVE FINISH ALUMALITE 200/R1/EB10 (ANODIZE) FROM INTERIOR SURFACE AND REFINISH AS FOLLOWS:
      THE INTERIOR SURFACE TO BE CHEM-MILLED IN ACCORDANCE WITH LSP-14-26100, FINISH ENTIRE SURFACE #76 (LSP-14-9010)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
$\overline{125}\sqrt{}$ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
$\overline{200}\sqrt{}$ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL $\sqrt{}$ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-11008-13-15&-15-1

CHEM-MILL LINE TOLERANCE
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	$.006^{+.003}_{-.001}$	.014 (REF)
☐		
☐		

(B2)

RECORD DATA		
MODULE	EO NO.	EFFECTIVITY
LM	B2	LTA-8(18)

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

LEM	SIZE F	CODE IDENT NO. 26512	LDW280-11008	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280
EO NO. 1486
CONTROL INFO NO. LDW280B8224

FOR THE FOLLOWING DASH ** [redacted]

REMOVE [redacted] LM-15 (45) : EFF.

DRAWING №	DASH № **	TITLE	NEXT ASSEMBLY	CHANGE №
LDW280M11034 ✓	-15, -11, -13	SEE DWG	LDW 280-56483	B1
M10966 ✓	-1, 3		-56483	B1
-11496 ✓	-29, 25, -27, -33, -H		53865	C1
-11497 ✓	-15, -17, -19		53865	B1
-11662 ✓	-13, -15, -17		-53865	A5
-11009 ✓	-21		-28326	C1
-12022 ✓	-11, -13			B1
-11008 ✓	-15-1		-28326	C1
LDW280P11519	-11	SEE DWG	LDW2AD-28877	B3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD #3587 [redacted] PKG 13 Pg. 17 (5)

REASON FOR EO: CONFIGURATION CHANGE To LM-15

DESCRIPTION OF EO: DASH ** FOR [redacted], REMOVE [redacted] LM-15 (45) EFF.

GAEC EO RELEASE: NJB 7-22-69
JK 7/24/69

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO ☐
DISPOSITION OF PARTS: REWORK ☐ SCRAP ✓

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
APPROVED BY				FDE				
DATE	7/8/69			7-8-69	7/10/69		7/10/69	7/26/69

PRIORITY: C
DRAWING TITLE: SEE DRAWING
DRAWING NO.: LEO-280
EO NO.: 1486

8-15-69
ISSUED BY GEO. W. ROCKLEIN X86048 4/25/69 (ML) SECTION VEN. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11009 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28326	PA-1 (47)	1
↑	↑	LEM-15(45)	1
		LEM-14(44)	1
		LEM-13(43)	1
		LEM-12(42)	1
		LEM-11(41)	1
		LEM-10 (40)	1
		LEM-9(39)	1
		LEM-8(38)	1
		LEM-7(37)	1
		LEM-6(36)	1
		LEM-5(35)	1
↓	↓	LEM-4 (34)	1
LEM	LDW280-28326	LEM-3(33)	1

LDW280-11009-21

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28326	QUAL TEST (70)	1
LEM	LDW280-28162	LEM-2(32)	1
LEM	LDW280-28162	LEM-1(31)	1

PART NO. LDW280-11009-17 | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28326	LTA-8(18)	1

PART NO. LDW280-11009-13 | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28162	LEM-2(32)	1
LEM	LDW280-28162	LEM-1(31	1

LDW280-11009-19

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28326	QUAL TEST(70)	1
LEM	LDW280-28162	LEM 2(32)	1
LEM	LDW280-28162	LEM 1(31)	1
LEM	LDW280-28326	LTA 8(18)	1

PART NO. LDW280-11009-15 | GAEC SCH NO. 30-

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00	4.00				
REV	B	B	B	B	B				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	—	GRUMMAN REL INFO B	
LAST DASH NO. USED	-21	PRIM NO. 215	JK(001) ME-3B 1-13/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	BOB WOOD		
LAYOUT BY	BOB WOOD		
CHECKED BY			
GROUP LDR	P.HENTON 5/6		
VEH. DES. INT	PAULSRUD 5/6		
STRUCTURES	RPW FEB 5/6	PROJ ENGR	J. ALBER RVC 5/10/66
STRUCTURES	HILDERMAN 5/6	REL GROUP	BOTTI 5/11/66
WEIGHTS	R.ROBESCH 5-9		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

STIFFENER
ACCESS PANEL~ASCENT STAGE-MID SECT
R.H. THERMAL SHIELD

SIZE	CODE IDENT NO.		
B	26512	LDW280-11009	B
SCALE	NONE	SHEET 1.00 OF 5	

ENG 71.1 12-65

SUPERSEDES LDW280-11009 NO CHANGE 5-6-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
									RETRACED NO CHANGE - LAST REVISION NO CHANGE - LOFTED DWG (WAS) DIMENSIONED DWG ADDED SHEET 1.10 - SHEET 1 OF 4 (WAS) 1 OF 3 - J PAWLITZ 7-27-66						
A	1	3.00						A1	IN FIELD FOR -11: .500 R. (TYP) 6 PLACES (WAS) 1.00 R (TYP) 6 PLACES.	NOTED	NOT	REQ'D	Pawlitz 7-27-66		
	2	3.00					✓	A2	ADDED CUTOUTS IN -11 SHORT SIDE FLANGES	NOTED	✓				
	3	1.00, 1.10 2.00 & 3.00							DELETED -11, ADDED -13, AND NOTE 1.	NOTED		-11	Castellano 8-10-66		8-27-66
B	1	1.00 2.00 3.00					✓	EOB1	ADDED -15 TO FLD, REWORKED TRIM OF -13	LEM-1(31) LEM-2(32) LTA-8(18)	-13		RD TAYLOR 5-31-68		
	2	1.00 2.00 3.00						EOB2	IN FLD RESTRICTED -13 TO LTA-8(18) ADDED -17 FOR LM-1(31) & LM-2(32). -17 MAY BE MADE BY REWORKING -13.	LM-1(31) LM-2(32)	NOTED				
	3	1.00						LE0280-446	TO -15 & -17 ADDED QUALTEST (70)	QUALTEST(70)	NOT	REQ			
	4	3.00					✓	EOB4	REVISED TRIM OF -17	LM-1(31) LM-2(32)	✓				
	5						✓	EOB5	REF EOB4: CORRECTED DASH NUMBER -17 WAS -13	LM-1(31 LM-2(32)	NOT	REQ			
	6	1.00 2.00 4.00					✓	EOB6 LCD 1224	ADDED -19. REVISED N/A OF -15 & -17 WAS LDW280-28326 ADDED SH 4.00	LM-1(31) LM-2(32)	NOT	REQ			
	7	1.00 2.00 3.00					✓	EOB7 LCD 1244	ADDED -21. (1 OF -21 REQD/MODULE ON LDW280-28326, EFF ON LM-3(33) THRU LM-15(45) & PA-1(47)	LM-3(33) THRU LM-15(45) PA-1(47)	NOT	REQ	E.C.G.		

LTR	GROUP LDR
A	

CHG APPROVED

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11009	B

SCALE NONE

SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11009-21	E	STIFFENER	AL ALLOY SH	QQ-A-250/12	7075-T6	.040 x 14 7/8 x 21 1/4		88	
		-19						.040 x 14 7/8 x 21 1/4			
		-17						.040 x 14 7/8 x 21 1/4			
		-15						.063 x 2 x 8	T6		
		LDW280-11009-13	E	STIFFENER	AL ALLOY SHEET	QQ-A-250/12	7075-T6	.040 x 14 7/8 x 21 1/4		88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

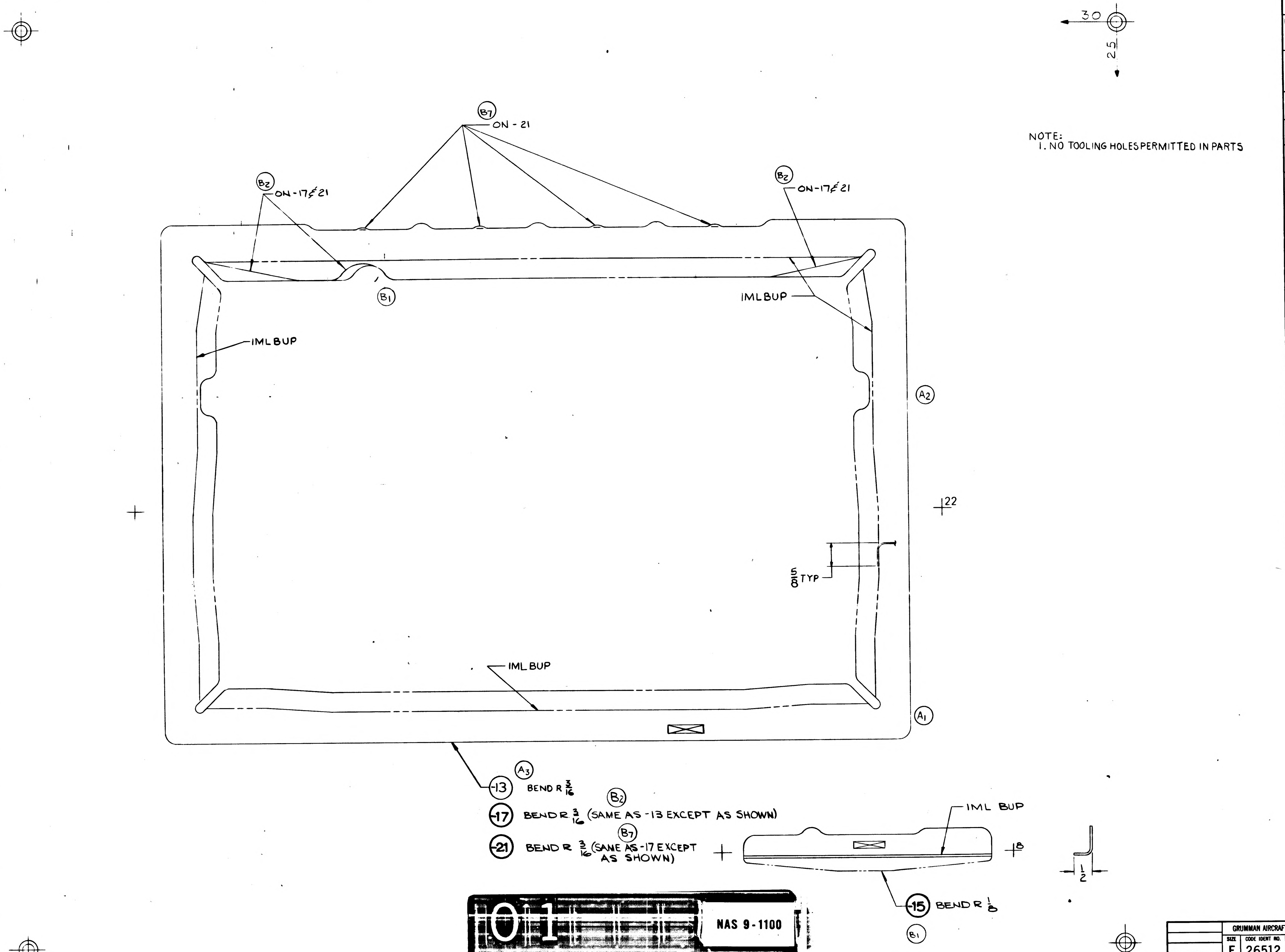
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11009	B
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


30
25
B7
ON - 21
B2
ON -17 & 21
B2
ON-17 & 21
B1
IML BUP
IML BUP
A2
22
5/8 TYP
IML BUP
A1
A3
-13
BEND R 3/16
B2
-17
BEND R 3/16 (SAME AS -13 EXCEPT AS SHOWN)
B7
-21
BEND R 3/16 (SAME AS -17 EXCEPT AS SHOWN)
IML BUP
8
1/2
-15
BEND R 1/8
B1

NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ƒ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

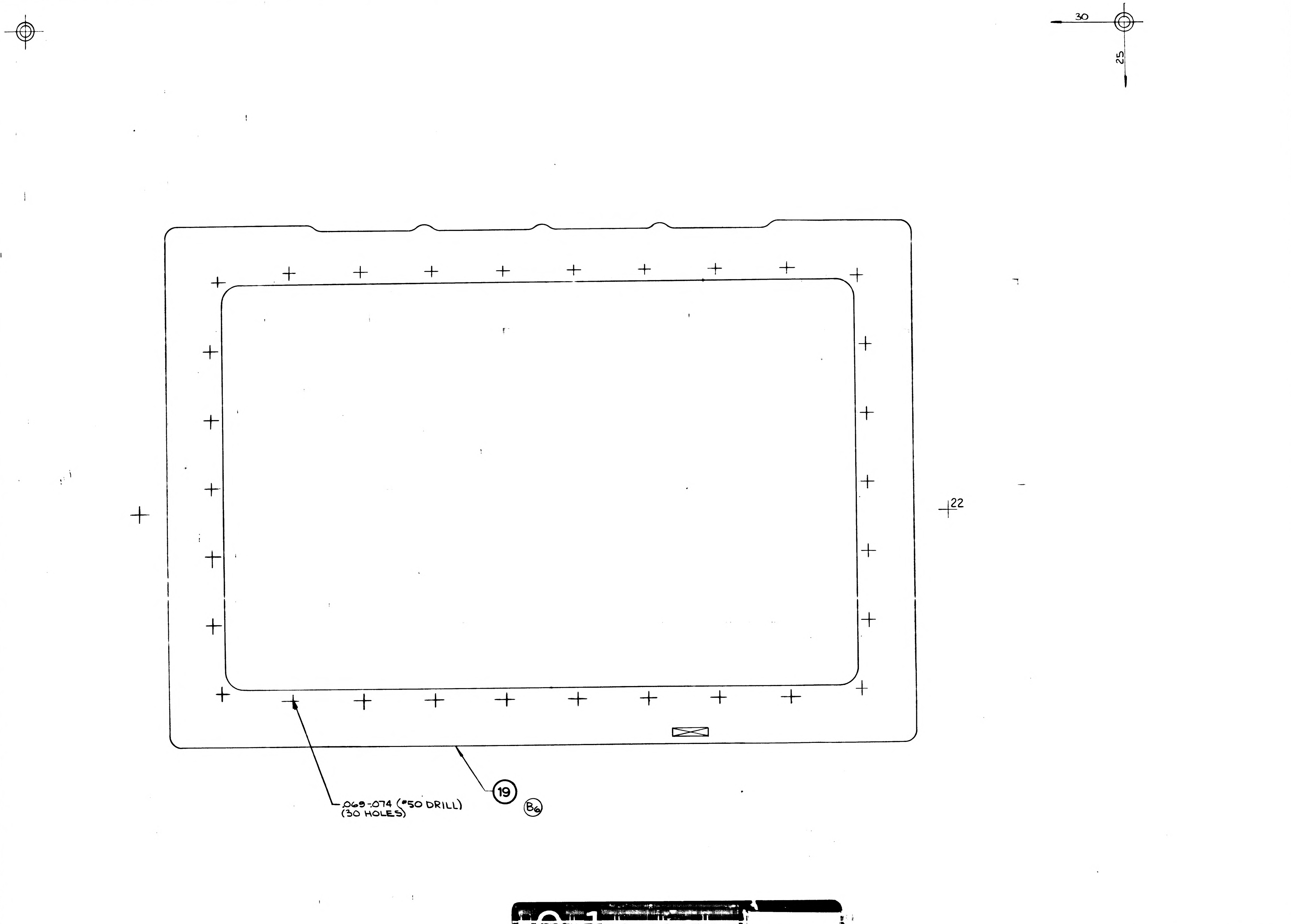
01 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	F	26512	LDW280-11009	B
	SCALE FULL			SHEET 3.00

FOR PHOTO REPRODUCTION

K2



MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

PART NUMBER
AND ALL OTHER MARKINGS
IN REGION MARKED ☒
USE BOTH SIDES IF NECESSARY.

FILLET AND INSIDE CORNER
RADII TOLERANCES
.016R TO .062R ± .010
.063R TO .250R ± .015
OVER .250R ± .030

DEPTH SHOWN FOR TAPPED
HOLES IS FULL THDS. 2-3 IMP. THDS.
BEYOND PERMISSIBLE

EXTERNAL THREAD LENGTH
SHOWN INCLUDES
2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT
HOLES OR SURFACES MARKED
WITH DOUBLE ASTERISK.

MISMATCH STEP OF ± .005
PERMISSIBLE DUE TO CHANGE
OF CUTTERS AT INSIDE
INTERSECTING SURFACES.

DIAMETERS MARKED
MUST BE CONCENTRIC WITHIN
FULL INDICATOR
READING

HOLES MUST BE KEPT FREE OF
CHROME PLATING SOLUTION.

ALL DIMENSIONS SHOWN TO BE MET
AFTER CADMIUM PLATING.
THICKNESS OF PLATE .0003 MIN
TO .0005 MAX. MIN THICKNESS TO
BE .0002 ON THREADED AREAS.
NO ALLOWANCES FOR PLATING IN
HOLES

125 √ SURFACE ROUGHNESS
INCLUDING REAMED HOLES
PER MIL-STD-10

200 √ FOR ALL DRILLED HOLES

REMOVE ALL BURRS.
BREAK ALL EDGES .015-.031

INSPECTION INFORMATION
MINIMUM PERMISSIBLE
AVERAGE EDGE DISTANCE
MARKED IS

SYMBOL √ DENOTES SURFACE
TO BE MACHINED

UNLESS OTHERWISE SPECIFIED
TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, NAS & MS AL ALY
RIVETS SHORTER THAN 1 INCH ARE
NOT SPECIFIED

TOLERANCE ON LOFTED
DELINEATIONS IS

01

NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE. L. I., NEW YORK			
LM	SIZE F	CODE IDENT NO. 26512	LDW280-11009	B
MODEL OR END ITEM	SCALE FULL		SHEET 4.00	

FOR PHOTO REPRODUCTION

ENG 735 644

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280 | EO NO. 1486
CONTROL INFC NO. LDW280B 8224

FOR THE FOLLOWING DASH ** ~~Dwgs~~ [redacted]

REMOVE ~~THE~~ [redacted] LM-15 (45): EFF.

DRAWING № ~~[redacted]~~		DASH № **	[redacted]	TITLE	NEXT ASSEMBLY	CHANGE №
LDW280 M 11034	✓	-15 -11, -13	[redacted]	SEE DWG	LDW 280-56483	B1
M 10966	✓	-1 3	[redacted]		-56483	B1
			[redacted]			
-11496	✓	-29 25, 27, 33, 1H	[redacted]		53865	C1
-11497	✓	-15, -17, -19	[redacted]		53865	B1
-11662	✓	-13, -15, -17	[redacted]		-53865	A5
-11009	✓	-21	[redacted]		-28326	C1
-12022		-11, -13	[redacted]			B1
-11008		-15-1	[redacted]		-28326	C1
LDW280 P11517		-11	[redacted]	SEE DWG	LDW280-28877	B3

DETAIL SPEC REQ ☐ | CL II ENGRG CHG ☐ | CL I ENGRG CHG ✓ | LCD #3587 [redacted] PKG 13 Pg. 17 (5)

REASON FOR EO: CONFIGURATION CHANGE To LM-15

DESCRIPTION OF EO: ~~Dwgs~~ DASH ** FOR [redacted]), REMOVE [redacted] [redacted] LM-15 (45) EFF.

Ⓡ GAEC EO RELEASE NJB
7-22-69
JK 7/28/69

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓			✓
REVISE DWG	RECORD EO	REWORK	SCRAP

APPROVED BY				FOR				
DATE	7/8/69			7-8-69			7/10/69	7/26/69
	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DRAWING	LEO-280	1486

8-15-69
ISSUED BY GEO. W. ROCKLEIN X86048 4/25/69 (ML) SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11010 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	LEM-2(32)	1 EA
LEM	LDW280-28159	LEM-1(31)	1 EA
LEM	LDW280-28159	LTA-8(18)	1 EA
PART NO. LDW280-11010-13,-21,-23,-25,-27 & -29		GAEC SCH NO. 30	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO			
LAST DASH NO. USED	-29	PRIM NO.	LE(001)		
		215	MP-A	9-7-6	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100 LINE ITEM 1 DOCUMENTATION TYPE II

DRAWN BY	A.PFORTSCH 5-6-66		
LAYOUT BY	A.PFORTSCH 5-6-66		
CHECKED BY			
GR LEADER	P.HENTON 5-6-66		
VEH DSGN INT	W.BISCHOFF 5-8-66		
STRUCTURES	J.V. F.B. 5-6-66	PROJ ENGR	J. ALBER R.C. 5-10-66
STRUCTURES	HILDERMAN 5-6-66	REL GROUP	BOTTI 5-11-66
WEIGHTS	D.ROBESCH 5-9-66		

® GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

STIFFENER
ASCENT STAGE - MID SECTION
LOWER THERMAL SHIELD LH

SIZE	CODE IDENT NO.		
B	26512	LDW280-11010	A
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 12-65

SUPERSEDES LDW280-11010 NO REV 5-11-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
									RETRACED NO CHANGE-LAST REV NO CHANGE- G.ZARCADOOLAS 8-20-66						
									SH 1.00 OF 4 WAS SH 1.00 OF 1-NEW SH 3.00 WAS SH 1.00-ADDED SH 1.10 & 2.00						
A	1			DCRF 323-1078					REVISED EFF OF -11,-13,-15,-17 & -19 FROM LTA-8 & LEM-1 THRU LEM-6 TO LTA-8, LEM-1 & LEM-2	NOTED			G. ZARC 8-20-66		
									DELETED -11,-15,-17 & -19 -ADDED -21,-23,-25,-27 & -29	LTA-8, LEM-1 & LEM-2		-11, -15 -17 & -19			

CHG APPROVED	LTR	GROUP LDR	VEH DSGN INT	STRUCTURES	STRUCTURES	WEIGHTS					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11010	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11010-29	E	STIFFENER	AL ALY SH	QQ-A-250/13	7075ALCLAD	.056X2⅛X5⅝	T6	88	4G
								-27						.050X2⅝X3¾			5A
								-25						.063X2⅞X7⅜			7D
								-23						.063X1⅝X7½			7G
								-21						.050X1⅝X6⅜			7G
								LDW280-11010-13	E	STIFFENER	AL ALY SH	QQ-A-250/13	7075ALCLAD	.050X2¼X6½	T6	88	7C

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

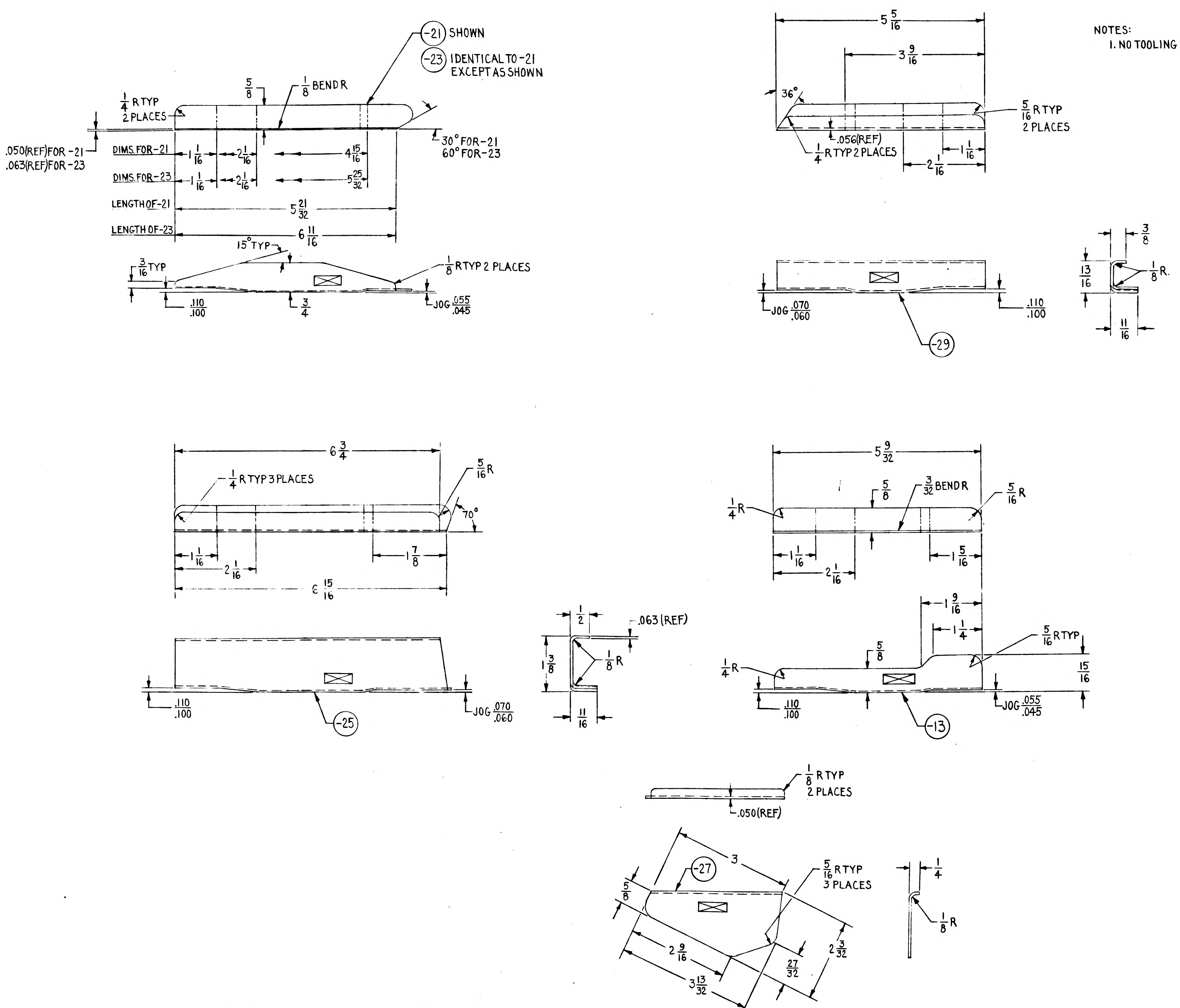
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11010	A
SCALE NONE		SHEET 2.00	

ENG 77.2 7-65

01

NAS 9-1100


-21 SHOWN
-23 IDENTICAL TO -21 EXCEPT AS SHOWN
1/4 R TYP 2 PLACES
5/8
1/8 BEND R
.050(REF) FOR -21
.063(REF) FOR -23
30° FOR -21
60° FOR -23
DIMS. FOR -21
1 1/16
2 1/16
4 15/16
DIMS. FOR -23
1 1/16
2 1/16
5 25/32
LENGTH OF -21
5 21/32
LENGTH OF -23
6 11/16
15° TYP
3/16 TYP
1/8 R TYP 2 PLACES
.110
.100
3/4
JOG .055
.045
5 5/16
3 9/16
36°
5/16 R TYP
2 PLACES
.056(REF)
1/4 R TYP 2 PLACES
1 1/16
2 1/16
JOG .070
.060
.110
.100
-29
3/8
13/16
1/8 R.
11/16
6 3/4
1/4 R TYP 3 PLACES
5/16 R
70°
1 1/16
2 1/16
1 7/8
6 15/16
.110
.100
-25
JOG .070
.060
1/2
.063 (REF)
1 3/8
1/8 R
11/16
5 9/32
5/8
3/32 BEND R
5/16 R
1/4 R
1 1/16
2 1/16
1 5/16
1 9/16
1 1/4
5/16 R TYP
5/8
1/4 R
15/16
.110
.100
JOG .055
.045
-13
1/8 R TYP
2 PLACES
.050(REF)
3
-27
5/16 R TYP
3 PLACES
5/8
2 9/16
3 13/32
27/32
2 3/32
1/4
1/8 R

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	/
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

LDW280-11010A

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LEM	F	26512	LDW280-11010

SCALE FULL
SHEET 3.00

01

NAS 9-1100

LDW280-11012 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	LEM-2(32)	1 EA
LEM	LDW280-28159	LEM-1(31)	1 EA
LEM	LDW280-28159	LTA-8(19)	1 EA
PART NO. LDW280-11012-11, 15, 17 & -19		GAEC SCH NO. 30-	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		1.10		2.00		3.00		
REV	B		B		B		B		
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO			
LAST DASH NO. USED	-19	PRIM NO.	CE (001)		
		-215	MP-B	9-7-6	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.020 +1/2° -0°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS-9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	J. KORYKORA 4/28		
LAYOUT BY	✓		
CHECKED BY			
GRP LEADER	P. HENTON 4-28		
VEH DES INT	W. BISCHOFF 4-28		
STRUCTURES	AJP FEB 5-2	PROJ ENGR	J. ALBER 5/12
STRUCTURES	HILDERMAN 5-3	REL GROUP	A. CARAMANICA 5/16
WEIGHTS	D. ROBESCH		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CAPSTRIP
ASCENT STAGE - MID SECTION
LH THERMAL SHIELD - Z25.12

SIZE	CODE IDENT NO.		
B	26512	LDW280-11012	B
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 12-65

SUPERSEDES LDW280-11012 'A CHANGE'

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE LAST REVISION 'A CHANGE' LOFTED DWG. WAS DIMENSIONED DWG., SH 1 OF 4 WAS SH 1 OF 1 O'NEILL 8-4-66						
B	1	1.00					✓	EOB1	IN FIELD ON-11 31 35/64 DIMENSION (WAS) 31 33/64	NOT REQ'D	NOT	REQ'D	R. ONEILL 8-5-66		
	2	1.10 2.00 3.00					✓	EOB2	DELETE -13, CREATE -19	LEM-1(31) THRU LEM-6(36) LTA 8(18)		-13			
	3	1.00, 1.10		DCRF 323-1078				®	EFF. FOR -11, -15, -17 & -19 WAS LTA-8, LEM-1 THRU LEM-6	NOTED		✓			

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	PROJ ENG	RELEASE
	B							

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280 - 11012	B
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
						1		LDW280-11012-19	E	CAPSTRIP	AL ALLOY SH	QQ-A-250/12	7075	.071×5 3/4×39 1/4	T6-CM	88	
						1		-17		ANGLE				.063×2×6 1/8	T6	88	
						1		-15		ANGLE				.063×2×6 1/8	T6	88	
						1		LDW280-11012-11	E	CAPSTRIP	AL ALLOY SH	QQ-A-250/12	7075	.056×2 3/4×32 3/8	T6-CM	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	HEAT TREAT	MIL-H-6088
						CM	CHEM MILL	LSP14-26100
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

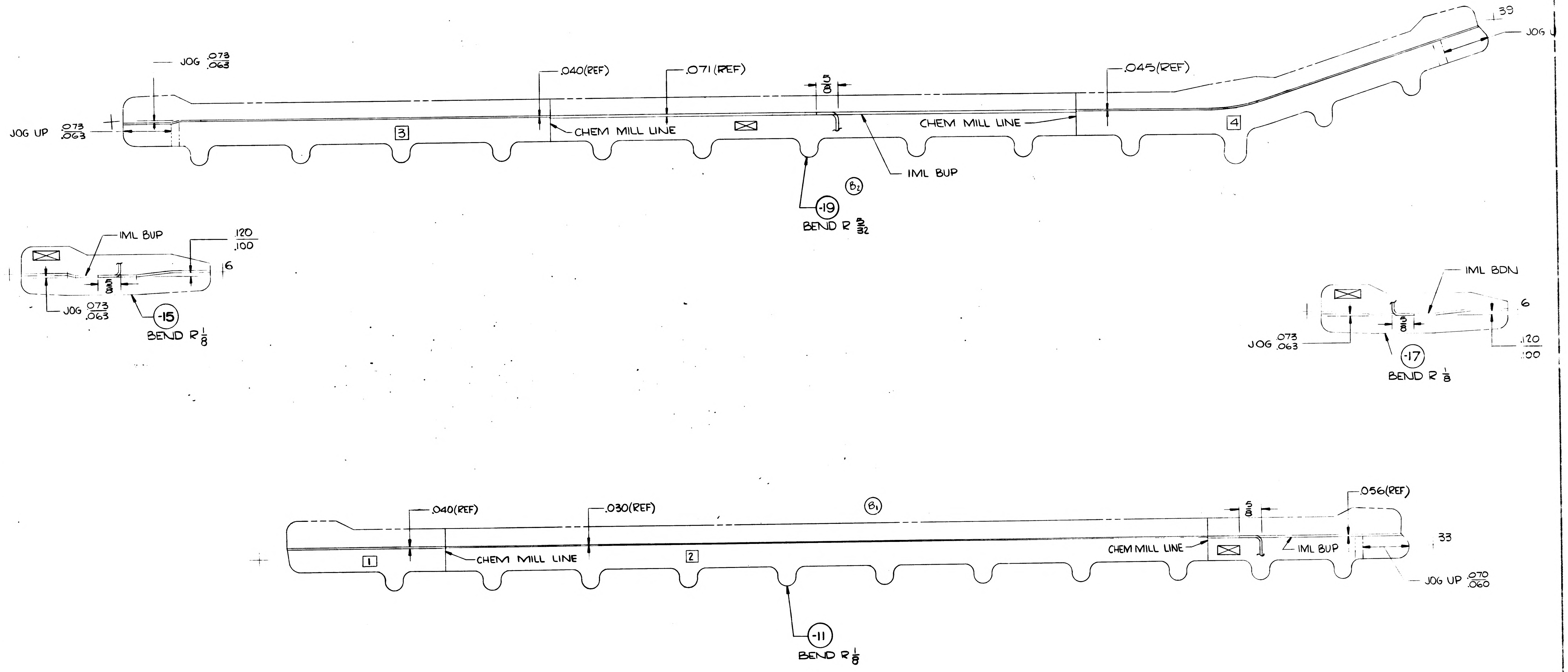
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-11012 B
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


JOG .073/.063
JOG UP .073/.063
.040(REF)
.071(REF)
5/8
.045(REF)
.39
JOG
CHEM MILL LINE
CHEM MILL LINE
3
4
IML BUP
B2
-19
BEND R 5/32
IML BUP
.120/.100
.6
JOG .073/.063
5/8
-15
BEND R 1/8
IML BDN
.6
JOG .073/.063
5/8
.120/.100
-17
BEND R 1/8
.040(REF)
.030(REF)
B1
5/8
.056(REF)
CHEM MILL LINE
CHEM MILL LINE
IML BUP
1
2
.33
JOG UP .070/.060
-11
BEND R 1/8

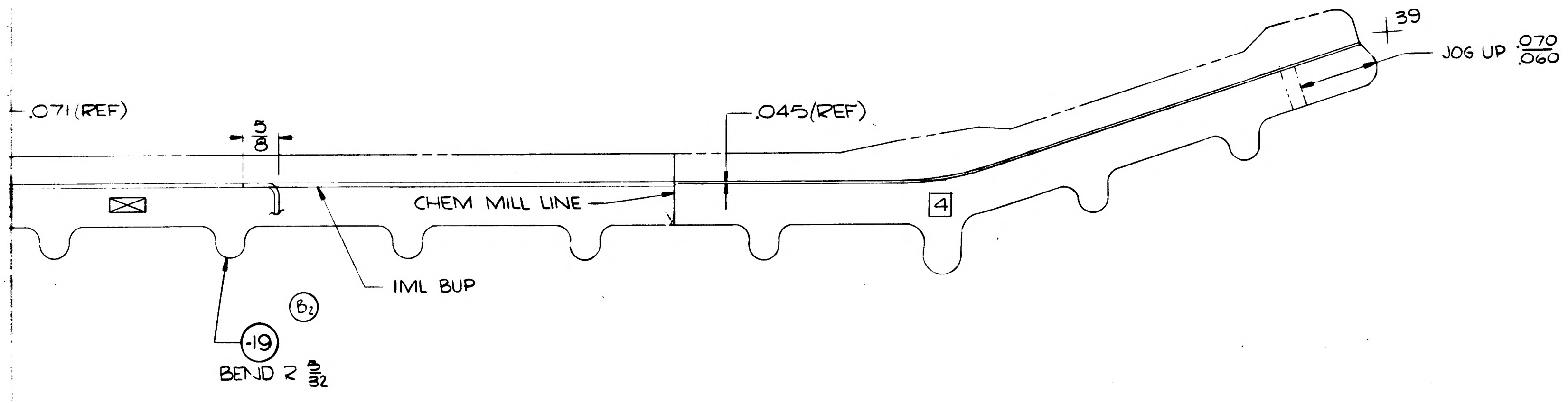
01/02 NAS 9-1100

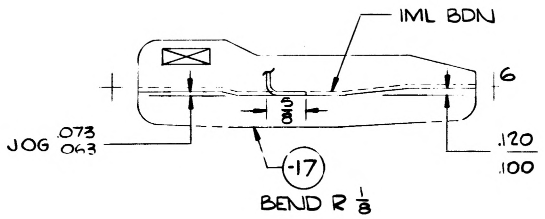
CODE IDENT NO. 25612
LDW280-11012
SH 3

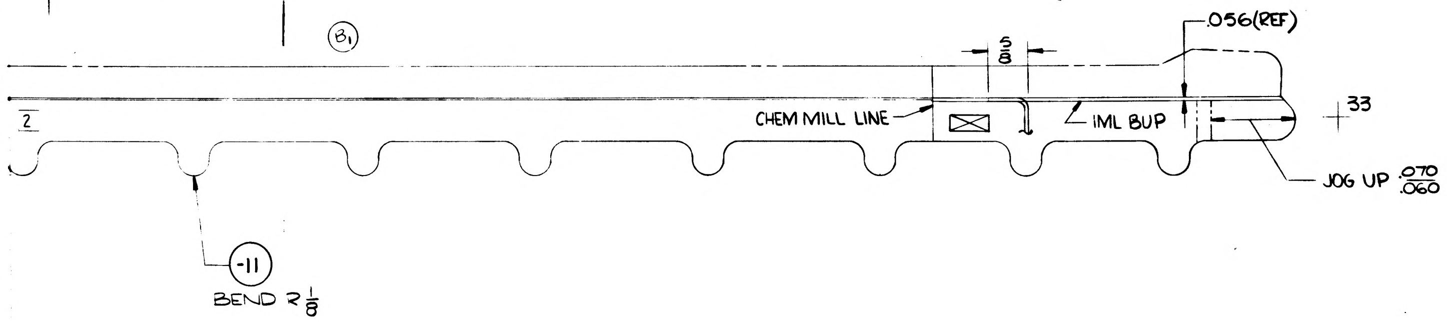
TR & MF
GK

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.







MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ [redacted].	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 34 X 70

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 72) = 18 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 4.5 SQ. FT.

PRINT TRIM LINE

LDW280-11012-11 ONLY

CHEM-MILL LINE TOLERANCE:
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
1	$.040^{+.003}_{-.001}$	.016
2	$.050^{+.003}_{-.001}$	.026

LDW280-11012-19 ONLY

CHEM-MILL LINE TOLERANCE:
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED) ± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
3	$.040^{+.003}_{-.000}$	.031
4	$.045^{+.003}_{-.000}$	.026

LDW280-11012

LDW280-11012

02/02 NAS 9-1100

CODE IDENT NO. 25612
LDW280-11012 SH 3

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE J	CODE IDENT NO. 26512	LDW280-11012	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

ENG 73.7 6-64

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO
EO NO.
CONTROL INFO NO.

DWG. NO.	DASH NO.*	TITLE	CHANGE NO	NEXT ASSEMBLY (SEE MODULE)	REQUIREMENTS	NUMBER REQD.
LDW280-10653 ✓	-15	SEE DWG.	B1	LDW280-28159	ADD QUAL TEST TO EFF.	1
LDW280-10898 ✓	-15		B1			
	-17					
LDW280-10985 ✓	-15		B1			
	-17					
LDW280-10986 ✓	-15		B2			
	-17					
LDW280-10987 ✓	-11		B2			
	-13					
	-15					
	-17					
	-19					
LDW280-10989 ✓	-15		B1			
	-17					
LDW280-10990 ✓	-15		C1			
	-17					
	-23					
	-25					
LDW280-10991 ✓	-17		C3			
	-23					
	-25					
	-27					
	-29					
	-30					
LDW280-10992 ✓	-13		C2			
	-15					
	-17					
	-21					
LDW280-10993 ✓	-15		C1			
	-17					
	-19					
	-21					
	-23					
LDW280-10994 ✓	-16		B3			
	-17					
LDW280-10995 ✓	-17		B1			
LDW280-10996 ✓	-13		B1			
LDW280-10997 ✓	-11		B1			
LDW280-11000 ✓	-15 -17 -19 -21		B1			
LDW280-11001 ✓			B1			
	-13					1
LDW280-11002 ✓	-11		B1			5
	-13					5
	-15					5
LDW280-11003 ✓	-17 -19 -21 -23		B1			6 6 6
LDW280-11007 ✓	-11		B1			1
	-13					
LDW280-11012 ✓	-11		C1			
	-15					
	-17					
	-19	SEE DWG.		LDW280-28159	ADD QUAL. TEST TO EFF.	

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY | DRAWING TITLE | DRAWING NO. | EO NO.

ISSUED BY________ SECTION________ GROUP NO.________

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

EO. NO LE0280
EO NO. 327
CONTROL INFO NO. LDW280A0538

DWG. NO.	DASH NO.*	TITLE	CHANGE NO.	NEXT ASSEMBLY	REQUIREMENTS	NUMBER REQD.
LDW280-11194	-11	SEE DWG.	B2	LDW280-28159	ADD QUAL. TEST TO EFF.	1
LDW280-11331	-11		A1	LDW280-28378		
	-13			-28378		
LDW280-28378	-1		A1	LDW280-28159		1
LDW280M10604	-1		B4	-28159		2
	-2			-28162		2
LDW280M10605	-1		B2	-28159		1
LDW280M10606	-3-1		B3	-28159		
LDW280M10609	-5		B3	-28159		
LDW280M10610	-5		C4	-28159		
LDW280M10869	-3		B4	LDW280-28159		
	-4			-28159		
LDW280M10902	-1		A1	-28150		
LDW280M10905	-1		A2	-28159		
LDW280M10952	-3		B1	-28159		
LDW280M10955	-1		A1			
LDW280M10956	-1		A1			
LDW280M10969	-1		B2			
LDW280M10977	-1		A2	-28159		
LDW280M10940	-1		B2	-28153		
LDW280M10975	-1		A2	-28153 -51153		
LDW280-11004	-11		B1	-28159		4
	-13					4
	-15					4
LDW280-11006	-15		B1			1
	-13	SEE DWG.		LDW280-28159	ADD QUAL TEST TO EFF.	1
	-17					1
	-19					1
	-21					1
	-23					1

FOR THE PRECEEDING DRAWINGS: ADD QUALIFICATION TEST EFFECTIVITY FOR DASH NO.S * NOTED.

DETAIL SPEC REQ | CL II ENGRG CHG | ✓ CL I ENGRG CHG

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
TO ADD QUALIFICATION TEST	FOR -* ADDED QUALIFICATION TEST EFFECTIVITY	VG 10/24

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
LN		NOTED		✓		NOT REQD		10/11	10-10-66			10/11	10/11		10/24	10/24/66

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DWG.	LE0280	327

ISSUED BY G.A. Green X7335 SECTION VEH. DES. INT GROUP NO. 335 PL 35 EMP

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 506
CONTROL INFO NO. LDW280A-5718

TO THE FOLLOWING DWG'S LISTED BELOW. ADD PA-1(W5) EFFECT

DWG Nº	** DASH Nº	REQ'D/MOD	DWG TITLE	N/A	CHG Nº
LDW280-10987	-11	1	SEE DWG	LDW280-53159	B4
10989	-15, -17	1 EA			B4
10991	-27, -29, -30	1 EA			C5
10992	-21, -23	1 EA			C5
10994	-19	1			B5
10995	-11	1			B3
10996	-11	1			B5
11001	-11, -13	1 EA			B4
11002	-11 -13	7 1			B3
11003	-19, -21	3 EA			B4
11004	-11 -13 -15	4 6 2			B3
11005	-11 -17 -19	5 2 1			B3
11007	-11, -13	1 EA			B3
11012	-11	1			C3
11210	-11	1			A1
11211	-17	1			A2
11212	-13	1			A2
11213	-11, -13, -15 -17, -19	1 EA			A1
11214	-11, -13, -15	1 EA			A1
11215	-11, -13, -15	1 EA			A2
11216	-11, -15	1 EA			A2
11217	-11, -13, -15, -17, -19, -21	1 EA			A2
11218	-11, -13	1 EA			A2
11219	-13, -15, 17, -21 -19	1 EA 3			A2
11220	-11, -13, -15, -17, -25, -21	1 EA			A2
11221	-13	1			A3
11222	-11 -13	1 3			A2
11223	-11	1			A2
11224	-11, -13, -15 -17, -19	1 EA			A1
11225	-11, -13, -15	1 EA			A1
11226	-11, -13, -15 -19, -21 -17	1 EA 3			A1
11227	-11, -15	1 EA			A2
11228	-11 -15, -17, -19, -23	1 2 EA			A2
LDW280-11229	-15, -13	1 EA	SEE DWG	LDW280-53159	A2

DETAIL SPEC REQ ☐ | CL II ENGRG CHG ☑ | CL I ENGRG CHG ☐ | LCR 19-1124 | 5

REASON FOR EO: UPDATE DWG REQ'TS FOR PA-1

DESCRIPTION OF EO: ADDED PA1(W5) REQ'TS TO **

GAEC C EO RELEASE: 3/11/67

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO
LM		PA-1 (W5)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: NOT REQ'D | REWORK | SCRAP

APPROVED BY								
DATE	3/7/67	3/7/67		3/7/67	3/9		3/8/67	3-11-67
.5	UDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: C
DRAWING TITLE: NOTED ABOVE
DRAWING NO.: LEO 280
EO NO.: 506

ISSUED BY M SHAPIRO X1153 SECTION UDI GROUP NO. 335 PL 35

01
NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280
EO NO. 1488
CONTROL INFO NO. LDW280B8212

FOR THE FOLLOWING DWGS (*) [redacted]

REMOVE [redacted] LM-15 (45): EFF.

DRAWING Nº (*)	** DASH Nº	[redacted]	TITLE	NEXT ASSEMBLY	CHANGE Nº
LDW280 -11004 ✓	-11 13 15	[redacted]	SEE DWG	LDW 280- 53159	B5
-11005 ✓	-11 17 -19	[redacted]			B5
-11211 ✓	-21	[redacted]			B1
-11007 ✓	-11 13	[redacted]			B5
-10996	-11	[redacted]			C1
-11012	-11	[redacted]			C5
-11798	-11, -13	[redacted]			B1
-11210	-13	[redacted]			B1
-11212	-15	[redacted]			B1
LDW280 -11213	-11, -13, -15, -17, -19	[redacted]	SEE DWG	LDW280- 53159	A3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD # 3587 [redacted] " PKG 13 Pg. 9810 (5)

REASON FOR EO
CONFIGURATION CHANGE To LM-15

DESCRIPTION OF EO
FOR [redacted] (* ** [redacted]) REMOVED [redacted] LM-15 (45) EFF.

GAEC EO RELEASE
Ⓡ 7-17-69
JK 7/3/69

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY							
✓			✓	DATE	7/8/69					7/10/69	7-26-69
REVISE DWG	RECORD EO	REWORK	SCRAP			SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DRAWING	LEO-280	1488

7-15-69
ISSUED BY Geo. W. Rockllein X86048 6/25/69 (ML) SECTION Veh. Des. Int. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11015

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23278	LTA-8(18)	8EA
		LTA-3(13)	
		LEM-6(36)	
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
LEM	LDW280-23278	LEM-1(31)	8EA
PART NO. LDW280-11015-15,-17		GAEC SCH NO. 35;32-6	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23278	LTA-8(18)	4 EA
		LTA-3(13)	
		LEM-6(36)	
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
LEM	LDW280-23278	LEM-1(31)	4 EA
PART NO. LDW280-11015-1,-13		GAEC SCH NO. 35-,32-6	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO
LAST DASH NO. USED	-17	PRIM NO. 215 / LE(001) MP12 / RS 4.5

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.030 0°30'
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	MASSEY 3-16-66	RELIABILITY	
LAYOUT BY	MASSEY 3/16/66		
CHECKED BY			
GR LEADER	B.PHILLIPS 3/30/66		
VEH-DES-INT	W.BISCHOFF 3/30/66		
STRUCTURES	FEB BW	PROJ ENGR	J.ALBER RMC 4/7/66
STRUCTURES	HILDERMAN 4/4/66	REL GROUP	BOTTI 4/8/66
WEIGHTS	L.B.GARCIA 4/6/66		

R

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT-MID SECT-REACTION CONTROL SYSTEM
VALVE MOUNTING

SIZE	CODE IDENT NO.	
B	26512	LDW280-11015
SCALE	NONE	SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE LAST REVISION NO CHANGE. SH. 1OF4 WAS 1OF1. EG	NOT REQD	NOT	REQD	JAEGGI 5-24-66		

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-66

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B	CODE IDENT NO. 26512	LDW280-11015
SCALE NONE		SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		MS20470AD5	E	RIVET	STD PART						
		LDW280-11015-17	E	STRAP	AL ALLOY	QQ-A-250/4	2024 T3	.050 × 3/4 × 3	NONE	88	
		-15	E	CHANNEL			2024	.040 × 2 × 3	T42	88	
		-13	E	PLATE			2024 T3	.050 × 4 1/2 × 5 1/2	NONE	88	
1		-11	E	BRACKET	AL ALLOY	QQ-A-250/4	2024 T3	.050 × 8 1/2 × 10	NONE	88	
		LDW280-11015-1	E	BRACKET ASSY					NONE		

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP-14-9030
T42	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B | CODE IDENT NO. 26512 | LDW280-11015

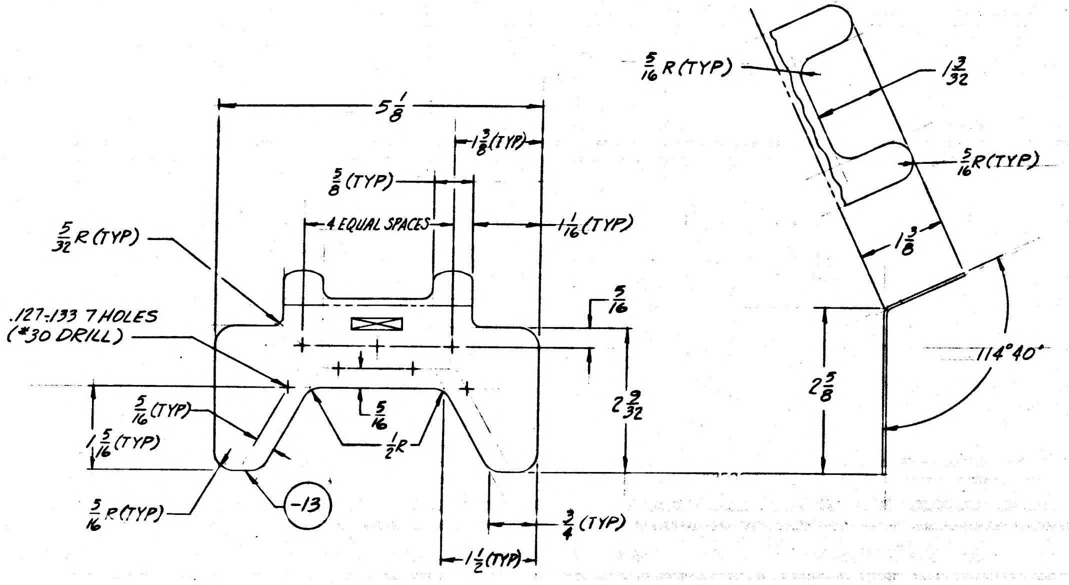
SCALE NONE | SHEET 2.00

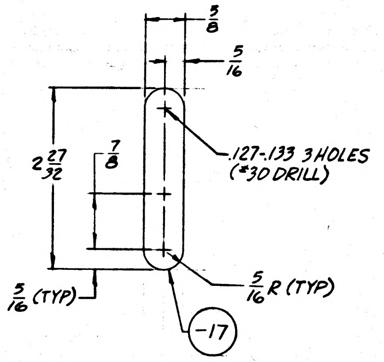
ENG 77.2 7-65

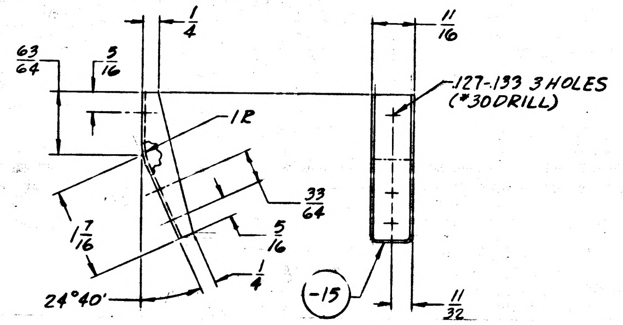
01

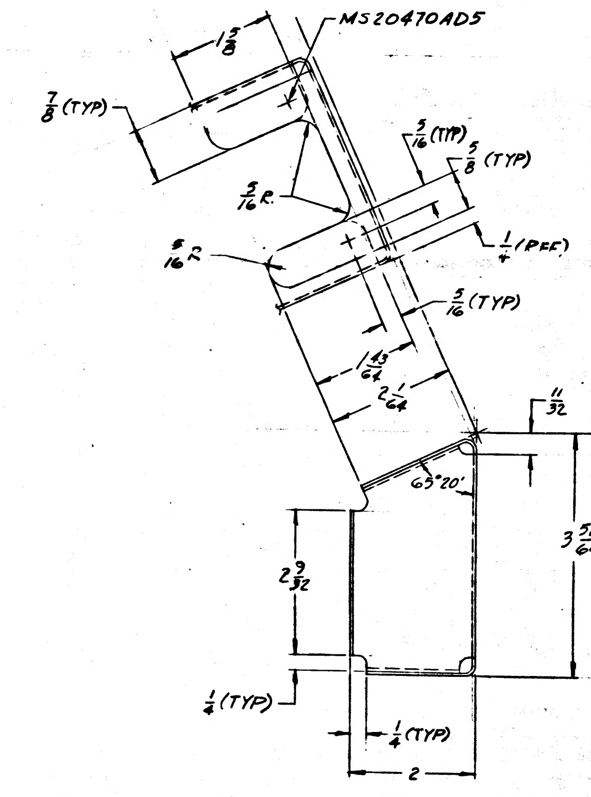
NAS 9-1100

NOTES:
1. ALL BEND RADII TO BE $\frac{1}{8}$
2. ALL BEND RELIEF CUTS TO BE $\frac{5}{32}$ RADIUS

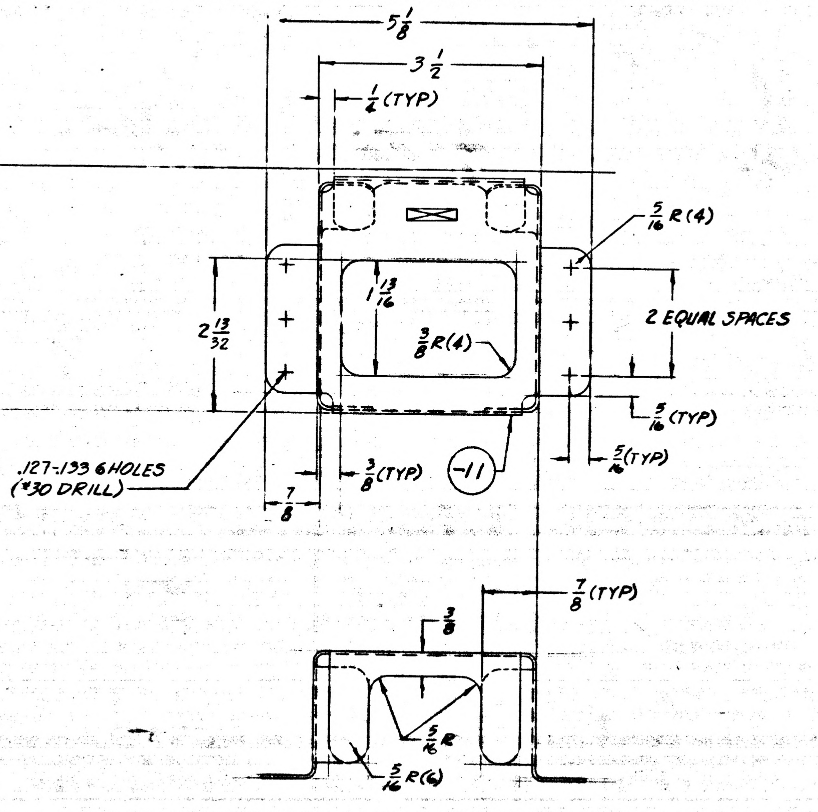

5 1/8
1 3/8 (TYP)
5/8 (TYP)
4 EQUAL SPACES
1 1/16 (TYP)
5/32 R (TYP)
.127-.133 7 HOLES (#30 DRILL)
5/16
2 9/32
5/16 (TYP)
1 5/16 (TYP)
5/16
1/2 R
3/16 R (TYP)
-13
3/4 (TYP)
1 1/2 (TYP)
5/16 R (TYP)
1 3/32
5/16 R (TYP)
1 3/8
2 5/8
114°40'


3/8
5/16
2 27/32
7/8
.127-.133 3 HOLES (#30 DRILL)
5/16 (TYP)
5/16 R (TYP)
-17


63/64
5/16
1/4
1 R
33/64
1 7/16
5/16
1/4
24°40'
11/16
.127-.133 3 HOLES (#30 DRILL)
-15
11/32


1 3/8
MS20470AD5
7/8 (TYP)
5/16 (TYP)
5/8 (TYP)
5/16 R
5/16 R
1/4 (REF)
5/16 (TYP)
1 43/64
2 1/64
11/32
63°20'
2 9/32
3 51/64
1/4 (TYP)
1/4 (TYP)
2

LDW280-11015-1 ASSY


5 1/8
3 1/2
1/4 (TYP)
5/16 R (4)
2 13/32
1 13/16
3/8 R (4)
2 EQUAL SPACES
5/16 (TYP)
.127-.133 6 HOLES (#30 DRILL)
3/8 (TYP)
-11
5/16 (TYP)
7/8
7/8 (TYP)
3/8
5/16 R
5/16 R (6)

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	✓
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	✓
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LEM	E	26512	LDW280-11015
	SCALE FULL		SHEET 3.00

LDW280-11015

LDW280-11015

01

NAS 9-1100

24 *

ENG 33.2 REV 3-60

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT. NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280
EO NO. 296
CONTROL INFO NO. LDW230 A 0658

*

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9 (39), LEM-10(40), LEM-11(41), LEM-12 (42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

	DRAWING NUMBER	CHANGE NUMBER	TITLE
✓	LDW280-10981	A1	SEE DRAWING
✓	-11015	B1	
✓	-11025	B1	
✓	-11028	B4	
✓	-11035	A2	
✓	-11036	B1	
✓	-11039	A1	
✓	-11045	A1	
✓	-11048	B1	
✓	-11050	C1	
✓	P11055	B2	
✓	P11056	C2	
✓	-11067	B1	
✓	-11068	B1	
✓	H11069	B1	
✓	-11070	C1	
✓	-11071	A1	
✓	-11072	A1	
✓	-11073	A2	
✓	P11087	B1	
✓	-11103	A1	
✓	-11116	A1	
✓	-11119	B1	
✓	-11123	A2	
	-11128	C1	
✓	-11149	A1	
✓	-11153	A1	
✓	-11154	A2	
✓	-11155	A1	
✓	-11156	B1	
✓	-11157	B2	
	LDW280-11160	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC C. EO RELEASE: 10-8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM 9(39)
LEM		LEM-10(40) LEM-11(41)	LEM-12 (42)
LEM		LEM-13(43) LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D

APPROVED BY: V.D.I. 9/23/66; STRESS GROUP 9.19; PROJ ENGRG 10-6-66; 10-3-66

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO.: LE0280

EO NO.: 296

ISSUED BY: L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 35

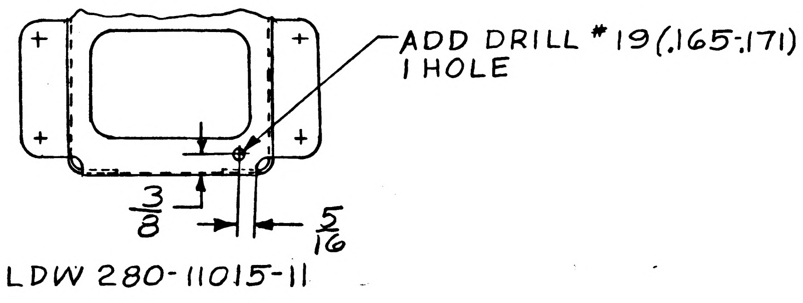
ENG 32.1 REV 3-65

*

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW 280-11015
EO NO. B2
CONTROL INFO NO. LM-5-9409

PARTIAL RECORD
EO FOR LTA-3 &
LTA-8
NOT TO BE INC.
ON LTA-3 & LTA-8



LDW 280-11015-11

PARTIAL RECORD EO

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
SUPPORT FOR LINES RUN	ADDED #19 DRILL HOLE TO -11 ADDED E.O. TO RECORD BLK FOR LTA-3, LTA-8	5

MODEL	EFFECTIVITY PROCURING ACTIVITY NO.	EFFECTIVITY GAEC UNIT NO.	EFFECTIVITY SUB CONTR UNIT NO.
LM	LTA-3(13)	LM-1(31)	LM-2(32)
	LTA-8(18)	LM-3(33)	LM-4(34)
		LM-5(35)	LM-6(36)

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
✓	✓	✓	

	APPROVED BY	DATE
10-13-66	WT	10/13/66
VDI		
SUPPORT		
RELIAB. GROUP		
GROUP LEADER	~	~
STRESS GROUP	JV	10/17
LIAISON ENGRG	CH	10/18/66
PROJ ENGRG	RM	10-17-66
GOVT		10-18-66

PRIORITY C

DRAWING TITLE BRACKET A/S MID-SECT RCS VALVE MOUNTING

DRAWING NO. LDW 280-11015

EO NO. B2

ISSUED BY DRENNAN/TRAUT X6454 SECTION EQUIP. LINES GROUP NO. 332 PL. 5

01 NAS 9-1100

C

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11015
EO NO. B3
CONTROL INFO NO. LDW280A-6423

IN MOD. BLOCK FOR -1, -13, -15 & -17:
REMOVE LTA-8(18) EFFECTIVITY

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐

3

REASON FOR EO: PARTS NOT REQD

DESCRIPTION OF EO: FOR -1, -13, -15, & -17 REMOVED LTA-B EFF.

GAEC C EO RELEASE: JK 4/29/67

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8(18)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG	RECORD EO	REWORK	SCRAP
✓			✓

APPROVED BY									
DATE	4/18/67			FDR 4/17/67	4-21-67		4/25/67	4-26-67
6	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONT~~

PRIORITY: C
DRAWING TITLE: BRACKET - A/S, M/S, RCS VALVE MOUNTING
DRAWING NO.: LDW280-11015
EO NO.: B3

ISSUED BY F.BADE X7033 4/14/67 SECTION VEH-DES. INT GROUP NO. 335 PL 25

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 834
CONTROL INFO NO. LDW 280B-0903

FOR THE FOLLOWING DWGS; FOR DASH No. NOTED *
ADD EFF: LFM-50 & PA 1(47) & NEXT ASSY.

LFM

(* USE APPLICABLE DASH NO. IN DESCRIPTION OF E.O.)

DWG. No.	DASH No.	No. REQD.	CHG. NO.	NEXT ASSY.
LDW280-10370	-19	2	D5	LDW230-54026
-10407	-17-19	2 EA.	D3	
-10426	-11	4	C2	
-10522	-11 -15,-16	2 4 EA.	B5	
-10546	-21-23-15,-19	2 EA.	C1	
-10547	-11-15	10	B4	
	-13-17	2EA.		
-10548	-13	4	C3	
-10549	-11,-17-18 -19	2 EA. 8	D3	
-10555	-11-17	4	B4	
	-13-15	2EA.		
-10556	-15	4	C3	
-10577	-11-13	2 EA	B3	
-10582	-11-13	2EA.	B4	
-10751	-21-23-27	2EA.	D2	
-10755	-13-23-19-21-25	2EA.	C1	
-10846	-19,-21,-13 -23,-15,-16	1 EA 2 EA	C3	LDW280-54026
-11095	-17 -11,-13,-15	2 2 EA	B4	LDW280-54026 LDW280-23341
-11103	-15	2	H3	LDW280-54026
-11531	-11	2	B3	LDW280-54026
-11532	-11-15	2EA.	A5	LDW280-54026
-11096	-15-11-13	2	B2	LDW280-23340
-11103	-11-13	2 EA.	A3	LDW280-23340
-11015	-1-13	4EA.	B4	LDW280-23278
	-15-17	8EA.		
-10978	-1-2	1EA.	B3	LDW280-23278
-11073	-13-15	2EA.	A3	LDW280H10536
LDW280-10711	-11-13-15-17	2EA.	B2	LDW280H10536
LDW280H10752	-11-13	2EA.	H2	LDW280H10536
LDW280-14235	-11	8	A4	LTM280-26963
	-15-19	2EA.		LTM280-26969
	-17	1		
-14255	-11-12	1EA.	B1	LTM280-26963
-10790	-11-12 -15-17-18	1EA.	B6	
	-19-21-22	1EA.		
-10789	-25,-26,-27-28-29	1EA.	A6	
	-31-32	1EA.		
-11907	-11-13-15-17-21-23	1EA.	B2	
LDW280-11882	-13-15-17-19-21	1EA.	B1	LTM280-26963
LDW280H10536	-1-3	2 EA.	C4	LDW280-54026
LDW280-23328	-1	2	B5	LDW280-54026
LDW280-23278	-1-2	1 EA	C6	LDW280-23328
LDW280-23341	-1	2	A4	LDW280-23328
LDW280-23340	-1	2	A2	LDW280-23328

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD #2019 CCA 667

REASON FOR EO: UPDATE PA-1(47) TO LM-3(33) CONFIG.

DESCRIPTION OF EO: FOR * ADDED PA-1(47) EFF.

GAEC EO RELEASE

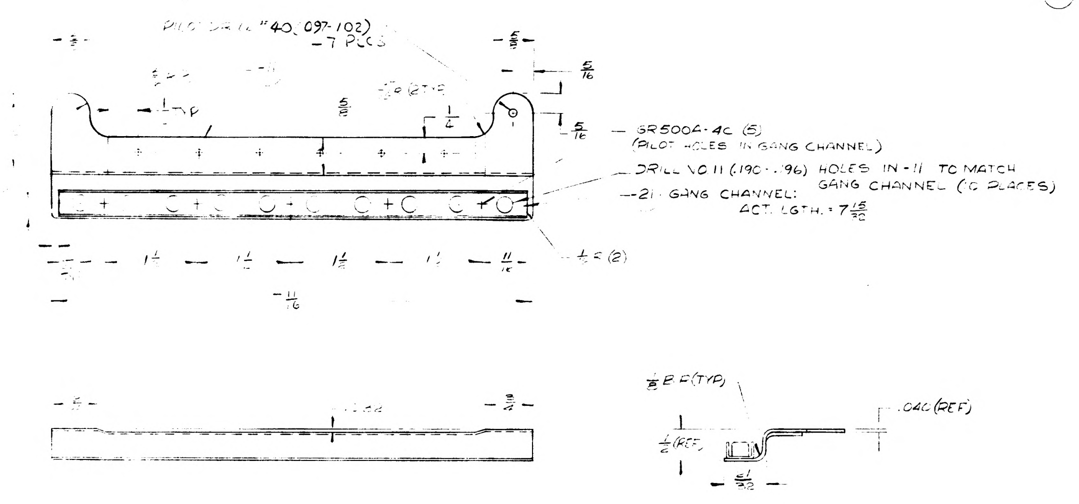
MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY							
	~~PROCURING ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.	✓		NOT-REQ		DATE	1/1/68			1-9	1-9		1/10/68
LM	LFM #50	PA-1(47)		REVISE DWG	RECORD EO	REWORK	SCRAP	—	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY: C
DRAWING TITLE: NOTED ABOVE
DRAWING NO.: LEO 280
EO NO.: 834

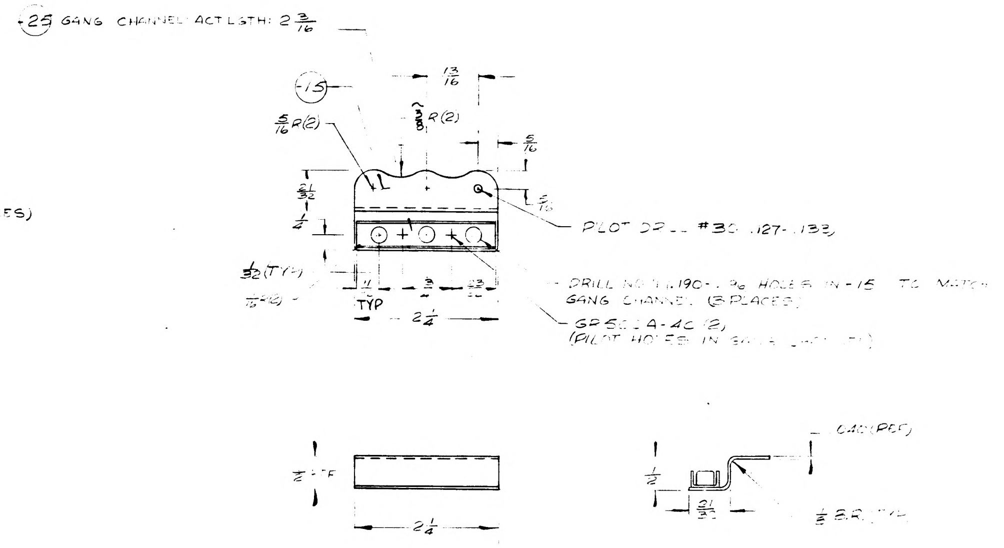
1-9
ISSUED BY W. FAIUK SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

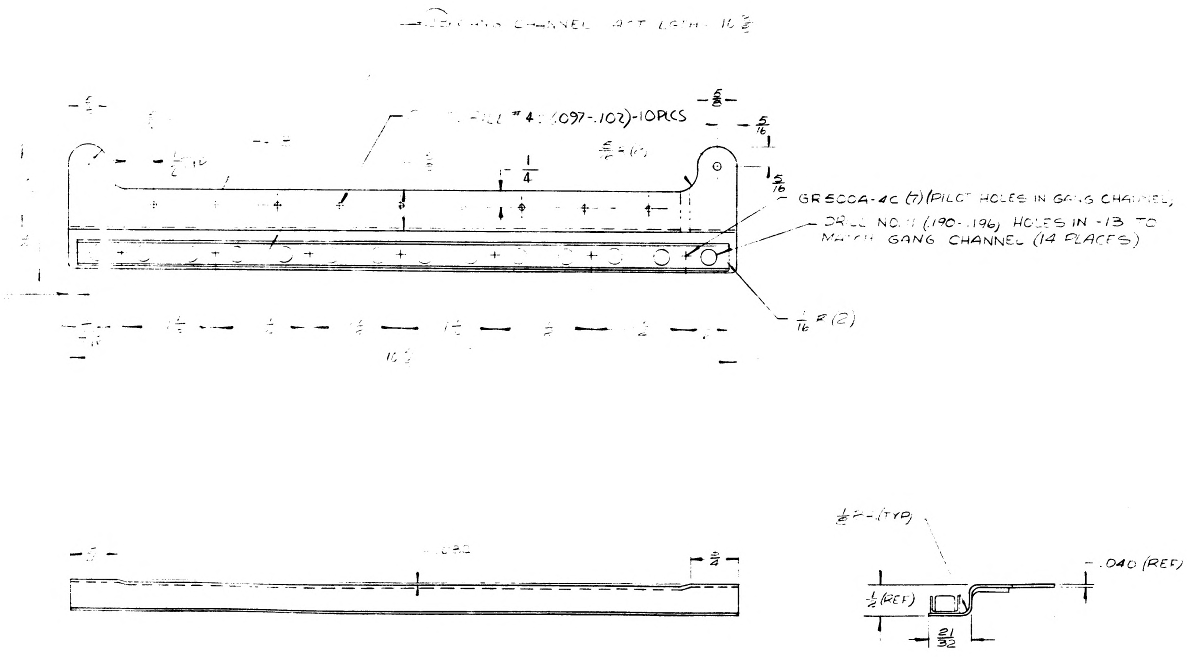
NAS 9-1100


PILOT DRILL #40 (.097-.102) -7 PLCS
5/8
5/16
1/4
5/8
5/16
GR500A-4C (5) (PILOT HOLES IN GANG CHANNEL)
DRILL NO.11 (.190-.196) HOLES IN -11 TO MATCH GANG CHANNEL (10 PLACES)
-21 GANG CHANNEL: ACT. LGTH. = 7 15/32
1 1/2
1 1/2
1 1/2
1 1/2
11/16
1/16 R (2)
11/16
1/8 B.R.(TYP)
.040 (REF)
1/2 (REF)
21/32

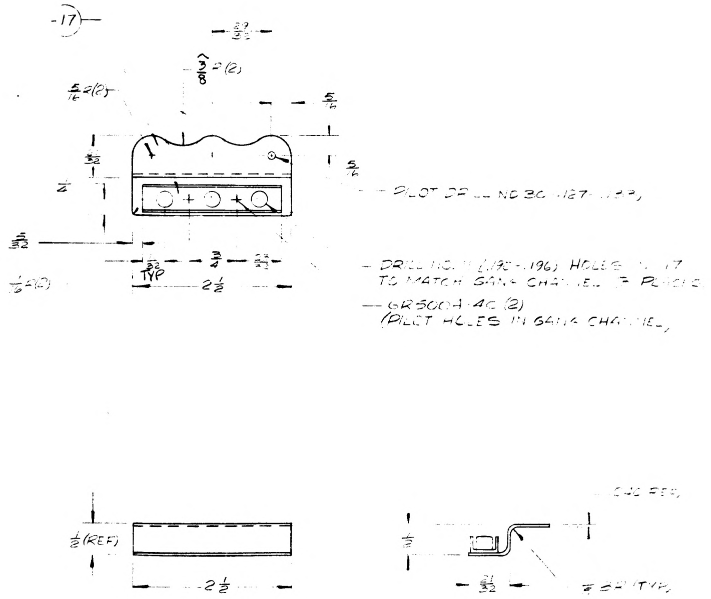
LDW 280-11016-1


-25 GANG CHANNEL ACT LGTH: 2 3/16
-15
13/16
5/16 R(2)
3/8 R(2)
5/16
21/32
1/4
5/16
PILOT DRILL #30 (.127-.133)
1/32 (TYP)
1/16 R(2)
11/32 TYP
3/4
23/32
2 1/4
DRILL NO 11 (.190-.196) HOLES IN -15 TO MATCH GANG CHANNEL (3 PLACES)
GR500A-4C (2) (PILOT HOLES IN GANG CHANNEL)
1/2 REF
2 1/4
.040 (REF)
1/2
21/32
1/8 B.R. TYP

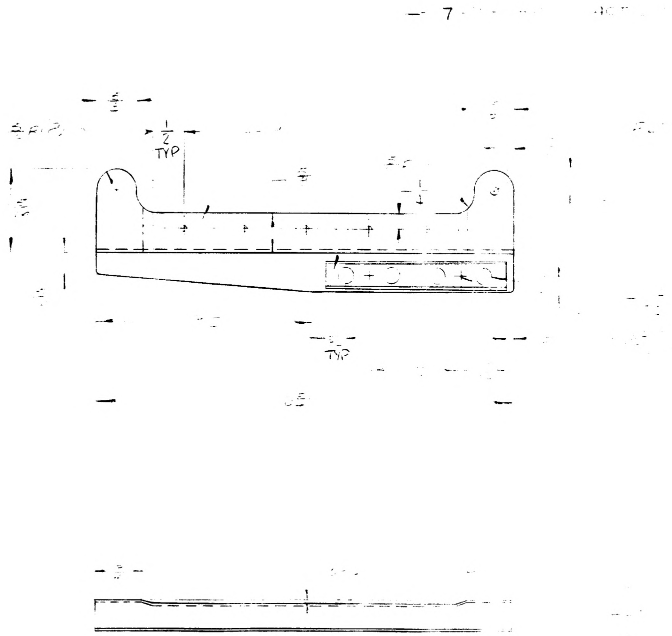
LDW 280-11016-5


GANG CHANNEL ACT LGTH 10 3/4
PILOT DRILL #40 (.097-.102)-10PLCS
5/8
5/16
1/4
5/16
GR500A-4C (7) (PILOT HOLES IN GANG CHANNEL)
DRILL NO. 11 (.190-.196) HOLES IN -13 TO MATCH GANG CHANNEL (14 PLACES)
1/16 R (2)
1 1/2
1 1/2
10 3/4
.080
3/4
1/8 B.R.(TYP)
.040 (REF)
1/2 (REF)
21/32

LDW 280-11[illegible]-3


-25 GANG CHANNEL ACT LGTH 2 3/16
-17
3/8 R (2)
5/16 R(2)
5/16
5/16
1/4
5/32
PILOT DRILL NO 30 (.127-.133)
1/32 TYP
3/4
2 1/2
1/16 R(2)
DRILL NO. 11 (.190-.196) HOLES IN -17 TO MATCH GANG CHANNEL (3 PLACES)
GR500A-4C (2) (PILOT HOLES IN GANG CHANNEL)
1/2 (REF)
2 1/2
.040 REF
1/2
21/32
1/8 BR (TYP)

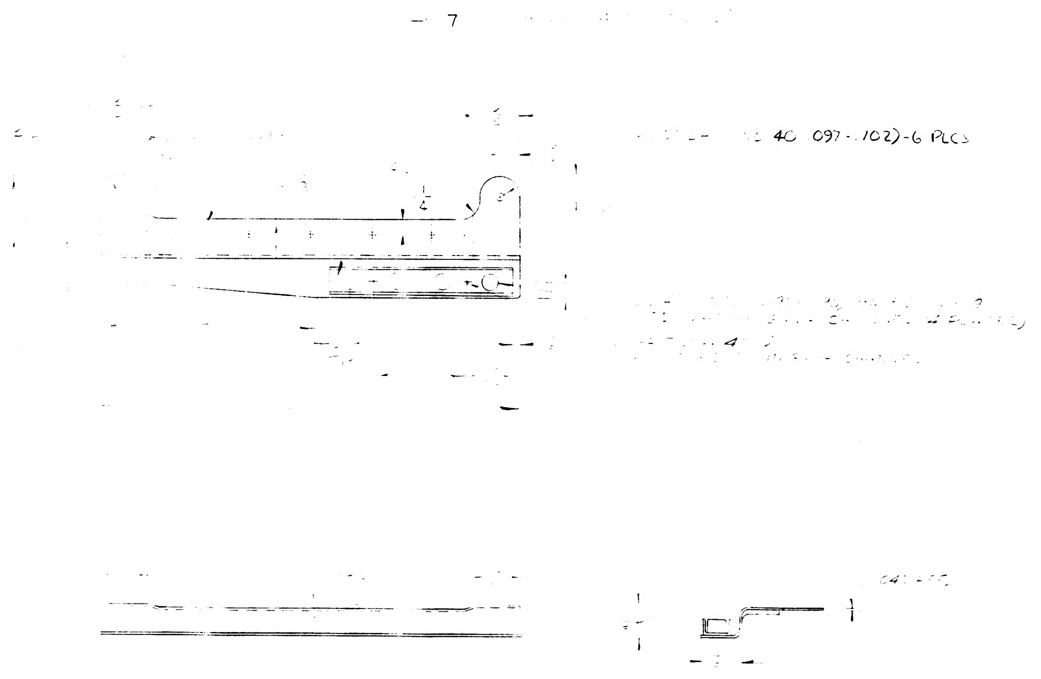
LDW 280-11016-7



[illegible]

2/L

01/02
NAS 9-1100



NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	G. S. S.	LSP14-9030

RECORD E. O.'s		
MODEL	E O NUMBER	MODULE NO.

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

MANUFACTURING OPERATIONS

NOTES CHECKED ✓ APPLY TO THIS DWG.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.	
$\sqrt{125}$ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.	
$\sqrt{200}$ FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
RUBBER STAMP PART NUMBER ~~AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ƒ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓

REVISIONS

REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION					DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MODULE NUMBER	DISPOSITION OF EXIST PARTS		ENGRG APPD	GOVT APPD
			GRUMMAN INFO ONLY DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER				RE-WORK	SCRAP		

DWG. SIZE 34 X

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X) = SQ. FT.
½ SIZE SHEET AREA (¼ OF FULL) = SQ. FT.

PRINT TRIM LINE

QTY REQ'D PER ASSY					PART OR IDENTIFYING NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE
[illegible]	-7	-5	-3	[illegible]												
2	2	2	7	5	GR5004-4C	E		RIVET	GRUMMAN STD				NONE	NONE		
1					LDW280-11016-27			GANG CHANNEL	NAS [illegible]			[illegible]TH				
	1	1			-25							"				
			1		-23							"				
				1	-21			GANG CHANNEL	[illegible]S 688-P6			[illegible]TH 3/8	NONE	[illegible]		
1					-19			BRACKET	AL ALLOY	QQ-A-355	2024	[illegible]	T3/42			
	1				-17						2024-T3	[illegible]	NONE			
		1			-15						2024-T3	[illegible]	NONE			
			1		-13						2024	[illegible]	T3/42			
				1	-11			BRACKET	AL ALLOY	QQ-A-355	2024	.040 [illegible]	T3/42			
					-9			BRACKET ASSY								
					-7											
					-5											
					-3											
					LDW280-11016-1	E		BRACKET ASSY								

PARTS TO BE REDRAWN ON
PRODUCTION FORMAT

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE	MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
				LEM	LDW280-28051	LEM-2 (32)	1 EA
				LEM	LDW280-28051	LEM-1 (31)	1 EA
				LEM	LDW280-28051	LTA 8(15)	1 EA
PART NO.		GRUMMAN SCH INFO		PART NO. LDW280-11016-1,-3,-5,-7 & -9		GRUMMAN SCH INFO 313	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/16 ±.030 ±[illegible]

DRAWN BY	[illegible]	3/23
CHECKED BY		
LAYOUT BY	Joe [illegible]	3/23
ORIG DWG AUTH		
DETAIL SPEC REQUIREMENT		
CLASS II ENGRG CHANGE		
CLASS I ENGRG CHANGE		4-8-66
GRUMMAN REL INFO		
PRIM. NO. LE(60) [illegible]		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L.I., N.Y.

BRACKET ASSY

CONTRACT NO. NAS 9-1100
DOCUMENTATION TYPE I

CODE IDENT NO.	SIZE	
26512	J	LDW280-11016
SCALE FULL		SHEET

02/02
NAS 9-1100

LDW280-11019 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54099	TM-2A/R(60)	1
	LDW280-54018	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
	LDW280-54018	LM-4(34)	1
	LDW280-53018	LM-3(33)	1
	LDW280-23099	LTA-3(13)	1
	LDW280-28099	TM-2	1
		LM-2(32)	1
		LM-1(31)	1
		LTA-8(18)	1
LM	LDW280-28099	LTA-1(11)	1

PART NO. LDW280-11019-11 | GAEC SCH NO. 31

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A

LAST SECT LTR USED

LAST DASH NO. USED -11

GRUMMAN REL INFO A

PRIM NO. 215 | LE(001) MP-14 | A-11-28-6 | EMF

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.010 ±0°30'

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM #1

DOCUMENTATION TYPE II

DRAWN BY	ROCKLEIN 3-21
LAYOUT BY	ROCKLEIN 3-21
CHECKED BY	
GR.LEADER	PHILLIPS 3-22
VEH.DES.INT.	BISCHOFF 3-23
STRUCTURE	F.E.B. B.W. 3-24
STRUCTURE	HILDERMAN 3-24
WEIGHTS	ROBESCH 3-25
PROJ ENGR	J.ALBEE 3-28
REL GROUP	C.IFF 3-30-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HAT
ASCENT STAGE ~ MID-SECTION
CABIN FAN HEAT EXCHANGER

SIZE B | CODE IDENT NO. 26512 | LDW280-11019 | A

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11019 NO CHANGE 3-30-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
									RETRACED NO CHANGE LAST REV. NO CHANGE ADDED 1.10, 2.00 & 3.00 LOFTED DWG. WAS DIM. DWG. M. GIERAK 10-25-66						
A	1							EOA1	ADDED LTA-3 AND LM-3 THRU LM-6 EFFECTIVITY (FOR-11)	NOTED	NOT	REQD	M. GIERAK 10-25-66		
	2							LEO 280-191	FOR-11 ADDED TM-2 A/R EFFECTIVITY (N/A LDW280-54099) ADDED LM-7 THRU LM-15 EFFECTIVITY (N/A LDW280-54099)	NOTED	NOT	REQD			
	3								REF. LEO280-191 FOR TM-2 A/R N/A LDW280-54099 WAS LTM280-25106 GB	NOTED	NOT	REQD			
	4	1.00 & 1.10						⑧	ON SH 1.00 N/A FOR LM-4(34) THRU LM-15(45) LDW280-54018 WAS LDW280-54099, N/A FOR LM-3(33) LDW280-53018 WAS LDW280-23099 GB	NOTED	NOT	REQD	L. DIXON 11-9-66	RWC 11-18-66	11-19-66

	LTR	GROUP LDR	VEH. DES. INT.	STRUCTURE	STRUCTURE	WEIGHTS					
CHG APPROVED	A	——									

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11019	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11019-11	E	HAT	AL. ALLOY SH.	QQ-A-250/4	2024-T3	.040 × 2 × 3	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

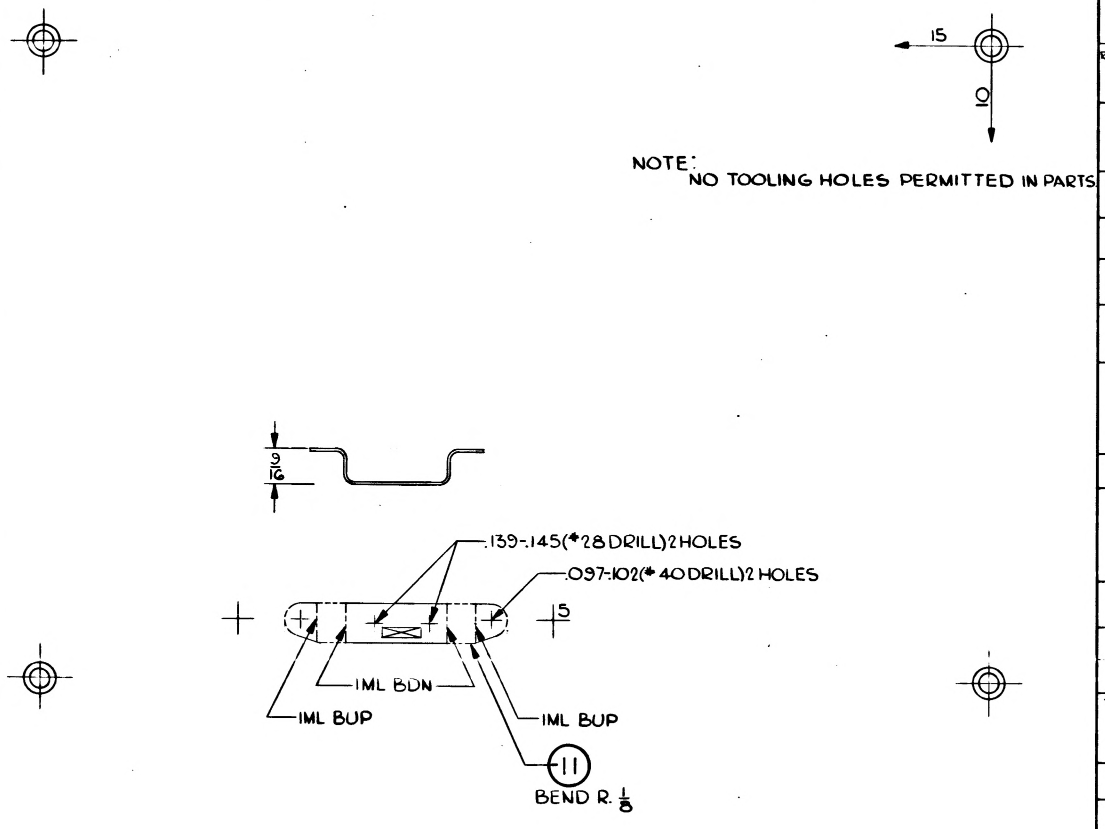
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B | CODE IDENT NO. 26512 | LDW280-11019 | A

SCALE NONE | SHEET 2.00

ENG 77.2 7-65

01 NAS 9-1100



NOTE:
NO TOOLING HOLES PERMITTED IN PARTS

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		R
LM	C	26512	LDW280-11019	A
	SCALE FULL		SHEET 3.00	

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K2

01 NAS 9-1100

C

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

*

DWG. NO. LDW280-11019
EO NO. B1
CONTROL INFO NO. LDW280A-7063

FOR -11: REMOVE LM-2(32) THROUGH LM-15(45) EFFECTIVITY.

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 1436 CCA-578

5

REASON FOR EO	DESCRIPTION OF EO	Ⓡ GAEC EO RELEASE C
PARTS NOT REQUIRED	REMOVED -11	VK 7/24/7

MODEL	EFFECTIVITY		
	~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	~~SUB CONTR UNIT NO.~~
LM		LM-2(32) THRU	LM-15(45)

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
✓			✓	DATE	7/21/67			7/21/67	7-21			7-24-67
REVISE DWG	RECORD EO	REWORK	SCRAP		V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	HAT-ASCENT STAGE - MID-SECTION CABIN FAN HEAT EXCHANGER	LDW280-11019	B1

7-31
ISSUED BY E. RANSOM X7035 SECTION V.D.I. GROUP NO. 335 PL 25

01 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW 280-11019
EO NO. B2
CONTROL INFO NO. LDW280B1161

IN MOD/BLOCK -11: REMOVE N/A LDW 280-54099 FOR TM-2A/R (60) (1 REQ'D)

DETAIL SPEC REQ	✓	CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: PART NOT APPLICABLE TO TM-2A/R. (CDR LIST)

DESCRIPTION OF EO: FOR -11, DELETED TM 2 A/R EFF

GAEC EO RELEASE: JK 1/26/68 (5)

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		TM-2A/R (60)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS									
REVISE DWG	RECORD EO	REWORK	SCRAP								
✓			✓								
				APPROVED BY				—			
				DATE	1/20/68			—	1-22		1/20/68 1-26-68
					VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY: C
DRAWING TITLE: HAT - ASCENT STAGE - MID-SECTION CABIN FAN HEAT EXCHANGER
DRAWING NO.: LDW280-11019
EO NO.: B2

ISSUED BY F. BADE X7033 SECTION VDI GROUP NO. 335 PL 25

01
NAS 9-1100

B

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280		EO NO. 860
CONTROL INFO NO. LDW 280B1987		

IN M/B TO DWG'S LISTED BELOW REMOVE LTA-8(18) EFF.
N/A LDW280-28099.

DWG#	DWG TITLE	DASH #	E.O. #
✓ LDW280-10983 ✓	✓ CLIP ASS'Y	-23	B5
✓ LDW280-11019 ✓	HAT CABIN FAN HEAT EXCH.	-11	B3

LEM

LCD# 2500 CCA 358

PKG 8L (5)

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG

REASON FOR EO: GFE & CFE STOWAGE

DESCRIPTION OF EO: IN M/B TO THE FOLLOWING DWG'S LISTED REMOVE LTA-8 (18)

GAEC EO RELEASE: JK 2/9/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM	LFM 96	LTA 8 (18)	

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
✓			✓

	APPROVED BY	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
DATE	2/3/68			2-2-68	2-2-68	2/2/68	2/7/68	
	G VD1				CW			

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE ABOVE	LEO 280	860

ISSUED BY P. WEISSLITZ X7033 SECTION VD1 GROUP NO. 335 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LEO 280
EO NO. 897
CONTROL INFO NO. LDW 280B 2640

THIS EO CANCELS CHANGES LISTED ON LEO 860 FOR THE FOLLOWING DRAWINGS:

CANCELLED CHANGE NO.	DRAWING NO.	DRAWING TITLE	CANCELLING CHANGE NO. ✓
B5	LDW280-10983	CLIP ASSY	B6 ✓
B3	LDW280-11019	HAT, CABIN FAN, HEAT EXCH.	B4 ✓

LFM

(5)

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG V LCD #250B, CCA 858 REF TWX: LTX-700-36 (3/7/68)

REASON FOR EO: GFE & CFE STOWAGE

DESCRIPTION OF EO: CANCELS CHANGES ON LEO860

GAEC EO RELEASE: JK 3/21/68

MODEL	EFFECTIVITY		
	~~PROCURING~~ ACTIVITY NO EI	GAEC UNIT NO.	SUB CONTR UNIT No.
LM	LFM 96	LTA-8(18)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG	RECORD EO	REWORK	SCRAP
✓		NOT REQ'D	

APPROVED BY	JAC			ENK					
DATE	3/14/68			3-14-68	3/18/68		3/18/68	3/20/68	
G	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT	

PRIORITY: C
DRAWING TITLE: SEE ABOVE
DRAWING NO.: LEO 280
EO NO.: 897

ISSUED BY 3/14/68 F BADE Y7033 SECTION VEH-DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11020 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23299	LTA-3 (13)	1

PART NO. LDW280-11020-31

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53299	LM-3 (33)	1
LM	LDW280-51299	LM-2 (32)	1
LM	LDW280-51299	LM-1 (31)	1
LM	LDW280-23299	LTA-3 (13)	1
LDW280-11020-19,-21,-25&-27			
LM	LDW280-51299	LM-2 (32)	1
LM	LDW280-51299	LM-1 (31)	1

PART NO. LDW280-11020-17-1

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LTM320-10007	TM-4 (64)	1
LM	LDW280-28299	LTA-8 (18)	1
LDW280-11020-17			
LM	LTM320-10007	TM-4 (64)	1
↑	LDW280-53299	LM-3 (33)	1
│	LDW280-51299	LM-2 (32)	1
│	LDW280-51299	LM-1 (31)	1
↓	LDW280-28299	LTA-8 (18)	1
LM	LDW280-23299	LTA-3 (13)	1
LDW280-11020-15			
LEM	LTM320-10007	TM-4 (64)	1 EA
LEM	LDW280-51299	LEM-2 (32)	1 EA
LEM	LDW280-51299	LEM-1 (31)	1 EA
LEM	LDW280-28299	LTA-8 (18)	1 EA

PART NO. LDW280-11020-11-13-14

GAEC SCH NO. 31-3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	~	GRUMMAN REL INFO B		
LAST DASH NO. USED	-31	PRIM NO.	JK 001	
		215	MP 8-3/9/1	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ± 1/32 ~ ±.010 ~ ± 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY	F. CURASI 3/21/66		
LAYOUT BY	B. MANOS 3/21/66		
CHECKED BY			
GR LEADER	J. PUSATERI 3/24/66		
VEH. DES. INT.	W. BISCHOFF 3/24/66		
STRUCTURES	FEB BW 3/26/66	PROJ ENGR	J. ALBER RMC 3/29/66
STRUCTURES	HILDERMAN 3/26/66	REL GROUP	C. IFF 3/30/66
WEIGHTS	D. ROBESCH DJL 3/29/66		

R GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ZEE
ASCENT STAGE ~ CABIN ~ DEAD FACE

SIZE	CODE IDENT NO.		
B	26512	LDW280-11020	B

SCALE NONE

SHEET 1.00 OF 4

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-11020 'NO CHANGE' 3/30/66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE LAST REVISION NO CHANGE. SH.1 OF 4 WAS 1OF1.	N.JAEGGI	7-12	-66			
A	1	1.00,1.10						EO A1	FOR-11,-13,-14,-15 & -17, ADDED TM-4 EFFECTIVITY.	TM-4(64)	NOT	REQD	JAEGGI 7-12-66		
	2	1.00,3.00						EO A2	TO-11, ADDED .165-.171 $\boxed{E-19}$ HOLE (6).	LTA-8, LEM-1 -2 & TM-4	✓				
	3	1.00,3.00						EO A3	ON-17 ANGLE, ADDED .165-.171 $\boxed{E-19}$ HOLE (1). EG	LTA-8,LEM-1-2					
B	1	1.00, 1.10						EOB1	FOR -15 (ONLY) ADDED EFF. FOR LM-3(33) 1 REQD./VEH N/A IS LDW280-53299	LM-3	NOT	REQD	R.DOTTIN 1-3-68		
	2	1.10,3.00						EOB2	ON -17 ADDED .165-.171 $\boxed{E\ 19}$ HOLE (1) ADDED TO KEY OF DWG. E = ELECTRONICS.	LTA-8, LM-1,LM-2	✓				
	3	1.00,1.10,2.00,3.00				✓		EOB3 LCD19-1069,CCA553	REVISED -15, CREATED -19,-21,-23,-25,-27 & -17-1 REMOVED LM-1&2 FROM-17	LM-1,LM-2					
	4	1.00,1.10,2.00,3.00					✓	EOB4	ADDED -29 DELETED -23	LM-3		-23			
	5	1.10, 3.00					✓	EOB5	TO -17 ANGLE ADDED $\boxed{E-19}$ HOLE (1)	LM-1,LM-2	✓				
	6	1.10					✓	LEO280-639	ON INCORPORATION OF EOB5 -17-1 ANGLE WAS -17 ANGLE		NOT	REQ'D			
	7	1.00 1.10					✓	EOB7 LCD2026	FOR -15,-19,-21,-25,-27 & -29 ADDED LTA-3 EFFECTIVITY	LTA-3					
	8	1.00,1.10,2.00,3.00					✓	EOB8	CREATED -31, REMOVED -29		✓			WC	

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B	CODE IDENT NO. 26512	LDW280-11020	B
SCALE NONE			SHEET 1.10

FOR CONTINUATION OF REVISIONS SEE SHEET

ENG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11020 -31	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024	.063 x 3 x 3	T42	88	
		-27		PLATE		QQ-A-250/12	7075-T6	.063 x 2 x 3	NONE		
		-25		BRACKET		QQ-A-250/4	2024	.063 x 3 x 3	T42		
		-21		PLATE		QQ-A-250/12	7075-T6	.063 x 2 x 5	NONE		
		-19		PLATE			7075-T6	.063 x 2 x 5	NONE		
		-17-1		ANGLE			7075	.050 x 4 x 21	T6		
		-17		ANGLE				.050 x 5 5/8 x 20 3/4			
		-15		DOUBLER				.040 x 5 7/8 x 6			
		-14		DOUBLER				.040 x 6 7/8 x 7 7/8			
		-13		DOUBLER				.040 x 6 7/8 x 7 7/8			
		LDW280-11020-11	E	ZEE	AL ALLOY SH	QQ-A-250/12	7075	.071 x 9 3/4 x 18 7/8	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6&T42	AL HEAT TREAT	MIL-H-6088
88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11020	B

SCALE NONE

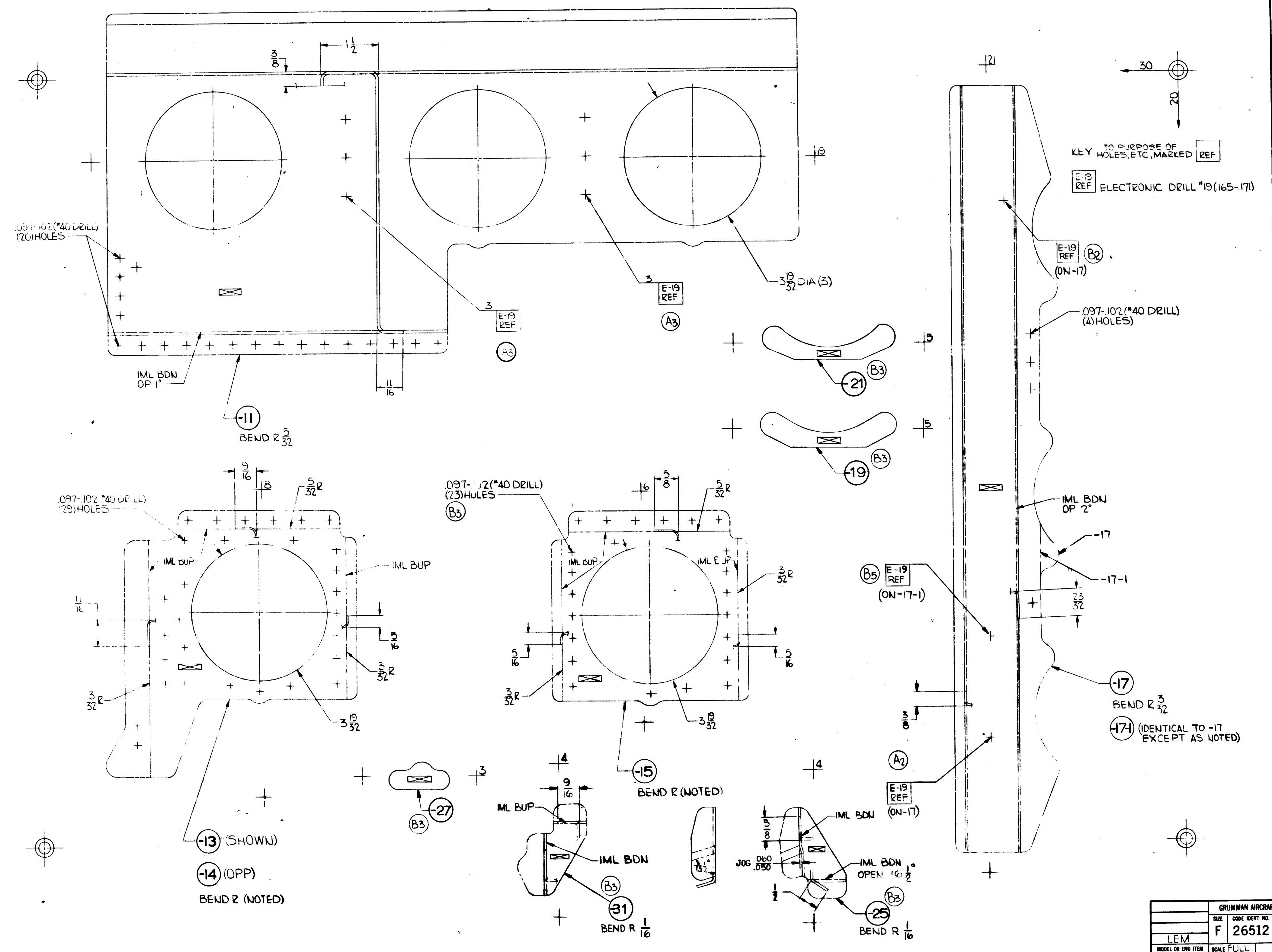
SHEET 2

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.



3/8
1 1/2
.097-.102 (#40 DRILL) (20) HOLES
IML BDN OP 1°
-11
BEND R 5/32
11/16
3
E-19 REF
A3
3 19/32 DIA (3)
19
21
30
20
-21
-19
B3
5
.097-.102 (#40 DRILL) (29) HOLES
IML BUP
9/16
18
5/32 R
11/16
3/32 R
3 19/32
-13 (SHOWN)
-14 (OPP)
BEND R (NOTED)
.097-.102 (#40 DRILL) (23) HOLES
16
5/8
3/32 R
5/16
-15
BEND R (NOTED)
-27
3
4
9/16
IML BUP
IML BDN
-31
BEND R 1/16
JOG .060/.050
IML BDN
IML BDN OPEN 16 1/2°
1/2
-25
BEND R 1/16
E-19 REF
B2
(ON-17)
.097-.102 (#40 DRILL) (4) HOLES
IML BDN OP 2°
-17
-17-1
23/32
B5
E-19 REF
(ON-17-1)
3/8
A2
E-19 REF
(ON-17)
-17
BEND R 3/32
-17-1 (IDENTICAL TO -17 EXCEPT AS NOTED)

KEY TO PURPOSE OF HOLES, ETC, MARKED REF

E-19 REF ELECTRONIC DRILL #19 (.165-.171)

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE F	CODE IDENT NO. 26512	LDW280-11020	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION K21

01

NAS 9-1100

LDW280-11021

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO.			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-51299	LEM-2(32)	2 EA
LEM	LDW280-51299	LEM-1(31)	2 EA
LEM	LDW280-28299	LTA-8(18)	2 EA
PART NO. LDW280-11021-17			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-51299	LEM-2(32)	1 EA
LEM	LDW280-51299	LEM-1(31)	1 EA
LEM	LDW280-28299	LTA-8(18)	1 EA
PART NO. LDW280-11021-11-13 & -15			

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO			
LAST DASH NO. USED	-17	PRIM NO. 215			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.010 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE III

DRAWN BY	F. CURASI 3/22/66		
LAYOUT BY	B. MANOS 3/22/66		
CHECKED BY			
GR. LEADER	J. PUSATERI 3/24		
VEH. DES. INT.	W. BISCHOFF 3/24		
STRUCTURES	FEB BW 3/25	PROJ ENGR	J. ALBER RMC 3/28/66
STRUCTURES	HILDERMAN 3/26	REL GROUP	CHUCKIFF 3/30/66
WEIGHTS	D. ROBESCH DJL 3/28		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DOUBLER
ASCENT STAGE~CABIN~DEAD FACE

SIZE B
CODE IDENT NO. 26512
LDW280-11021
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE LAST REVISION NO CHANGE. SH 1OF4 WAS 1OF3 EG				JAEGGI 7-8-66		

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B

CODE IDENT NO. 26512

LDW280-11021

SCALE NONE

SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11021-17	E	STRAP	AL ALLOY SH	QQ-A-250/12	7075	.080 x 1 3/8 x 4 1/2	T6	88	
		LDW ↕ -15	↕	CLIP	↕	↕	7075	.040 x 2 x 2 3/8	T6	↕	
		LDW ↕ -13	↕	CHANNEL	↕	↕	7075	.032 x 2 x 8 1/2	T6	↕	
		LDW280-11021-11	E	DOUBLER	AL ALLOY SH	QQ-A-250/12	7075-T6	.032 x 3 5/8 x 11 3/4	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

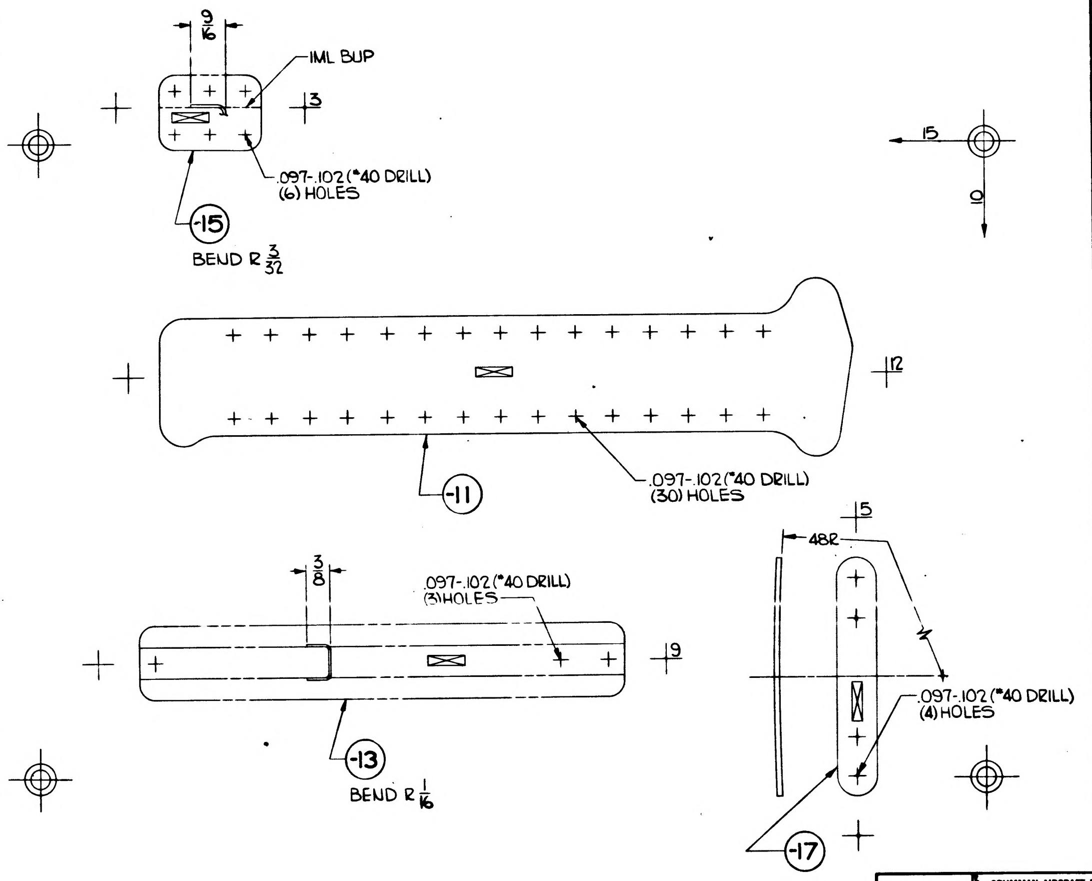
SIZE	CODE IDENT NO.	
B	26512	LDW280-11021
SCALE NONE		SHEET 200

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.


9/16
IML BUP
3
.097-.102 (#40 DRILL) (6) HOLES
-15
BEND R 3/32
15
10
12
-11
.097-.102 (#40 DRILL) (30) HOLES
3/8
.097-.102 (#40 DRILL) (3) HOLES
19
-13
BEND R 1/16
5
48R
.097-.102 (#40 DRILL) (4) HOLES
-17

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-11021

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LEM	C	26512	LDW280-11021
	SCALE FULL		SHEET 3.00

FOR PHOTO REPRODUCTION K2 1

NAS 9-1100

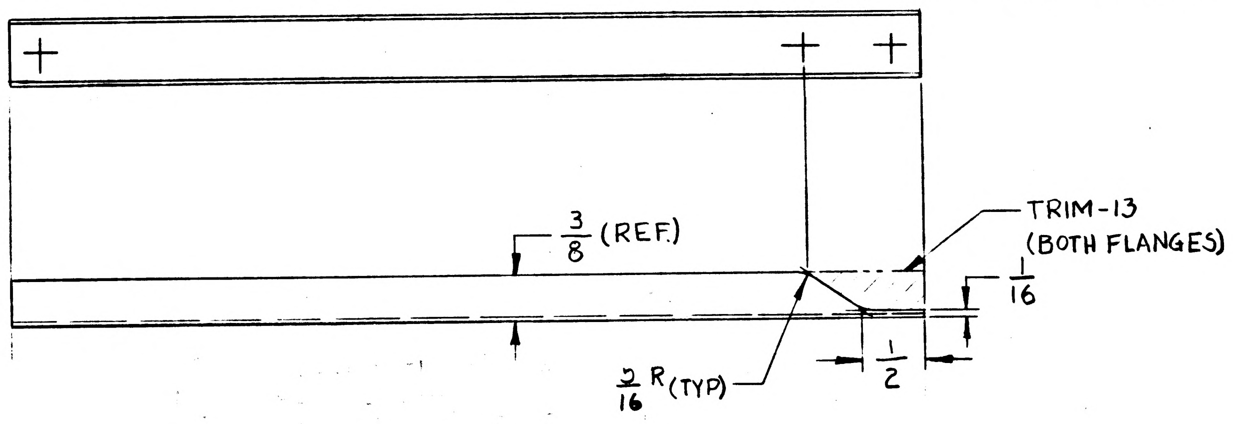
ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11021
EO NO. P1
CONTROL INFO NO. LM-5-11095

TRIM -13 FOR LTA-8 (RECORD PORTION OF E.O.)

PARTIAL RECORD E.O.



-13, (EFF. LM1 #2 & LTA-8)
CORRECT TO 2 REQ'D/MODULE WAS 1 REQ'D/MODULE

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	5

REASON FOR EO
TO PROVIDE CLEARANCE FOR LDW 280-11291-15.

DESCRIPTION OF EO
ADDED E.O. TO RECORD BLOCK FOR LTA-8. FOR -13, (2) REQ'D WAS (1) PER MODULE.

GAEC EO RELEASE

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA8 (18)	
		LM1 (31)	
		LM2 (32)	

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
✓	✓	-13	

APPROVED BY	WT			~	HHC	DV	RMC	
DATE	11/15/66			~	11-15-66	11/15	11-21-66	11-15-66
I		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	DOUBLER ASCENT STAGE-CABIN-DEAD FACE	LDW 280-11021	B1

ISSUED BY P. GRUND X6454 11/10/66 SECTION V.D.I. GROUP NO. 335 PL 5

01

NAS 9-1100

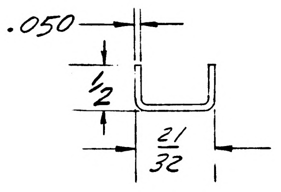
ENG 32.1 REV 3-65 A

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER EMF-A

DWG. NO. LDW280-11021		EO NO. B2
CONTROL INFO NO. LDW280A50B2		

ADD
-19

.050 GAGE
7075 AL. ALLOY SH. QQ-A-283
H.T. TO T6 PER MIL-H-6088
FIN #88 PER LSP14-9030 BR. 3/32
2 REQ'D / VEH



ADD
-19

ADD -19 IDENTICAL TO -13
EXCEPT AS SHOWN

REMOVE -13 REQUIREMENTS
FOR LM-1 & LM-2

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		LCE 886

REASON FOR EO: STRUCTURAL REQUIREMENT

DESCRIPTION OF EO: ADDED -19 EFF LM-1 & LM-2 FOR -13 REMOVED LM-1 & LM-2 REQUIREMENTS

GAEC EO RELEASE: 1/21/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM-1(31)	
		LM-2(32)	

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
✓			✓

APPROVED BY								
DATE	1/20/67			1-20-67	1-20-67		1-20-67	1/21/67
5	UDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GAEC~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	DOUBLER - A/S CABIN DEAD FACE	LDW280-11021	B2

ISSUED BY R.P. OBERNDORFER X1156 SECTION UDI GROUP NO. 335 PL 35

01 NAS 9-1100

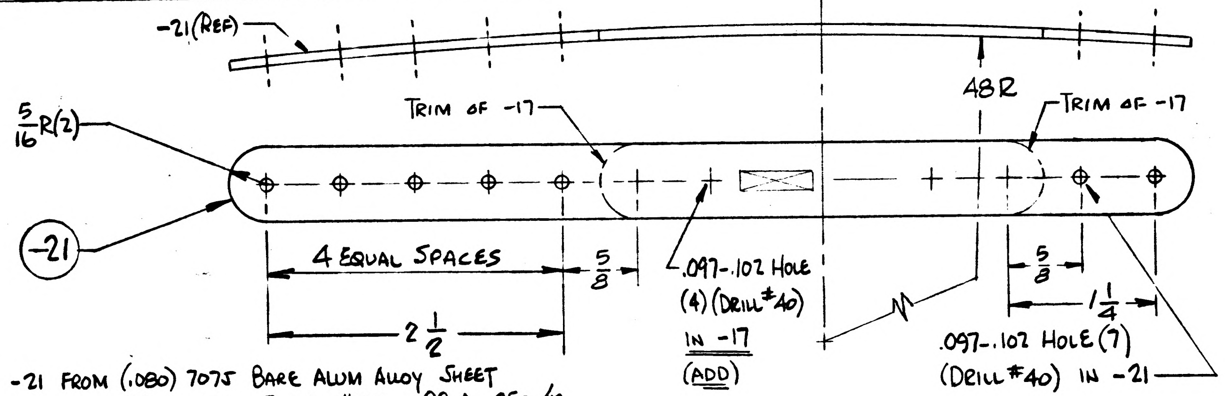
ENG 32.1 REV 3-65

(A)

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER *

DWG. NO. LDW 280-11021		EO NO. B3
CONTROL INFO NO. LDW 280A-8772		

CREATE -21 IDENTICAL TO -17 (EXCEPT AS SHOWN):
EFFECTIVITY: LM-1(31) AND LM-2(32)
NEXT ASSY: LDW 280-51299 QUANTITY: 1 REQ'D/MOD
FOR -17: QUANTITY OF 1/MOD WAS 2/MOD (LM-1(31) & LM-2(32)) (QUANTITY UNCHANGED ON LTA-8(18))



-21(REF)
48R
TRIM OF -17
TRIM OF -17
5/16 R(2)
-21
4 EQUAL SPACES
5/8
.097-.102 HOLE (4) (DRILL #40) IN -17 (ADD)
2 1/2
5/8
1 1/4
.097-.102 HOLE (7) (DRILL #40) IN -21

MAKE -21 FROM (.080) 7075 BARE ALUM ALLOY SHEET
H.T. TO T-6, FINISH #88, QQ-A-250/12

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG		LCD #2026

REASON FOR EO: CIRCUIT INTERRUPTER/STRUCTURAL COMPATIBILITY PROGRAM

DESCRIPTION OF EO: CREATED -21
FOR -17: QUANTITY OF 1/MOD (LM-1(31) & LM-2(32)) WAS 2/MOD

GAEC EO RELEASE: JK 8/22/7

MODEL	~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	~~SUB CONTR UNIT NO.~~
LM	LM1-(31)K	LM-2 (32)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
✓			-17	DATE	8/16/67			8-16-67	8-18		8/18/67	8/21/67
REVISE DWG	RECORD EO	REWORK	SCRAP		VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP		PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	DOUBLER - ASCENT STAGE, CABIN, DEADFACE	LDW 280-11021	B3

8/19
ISSUED BY Geo. W. Rocklein x7033 8/16/67 SECTION Veh. Des. Int. GROUP NO. 335 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

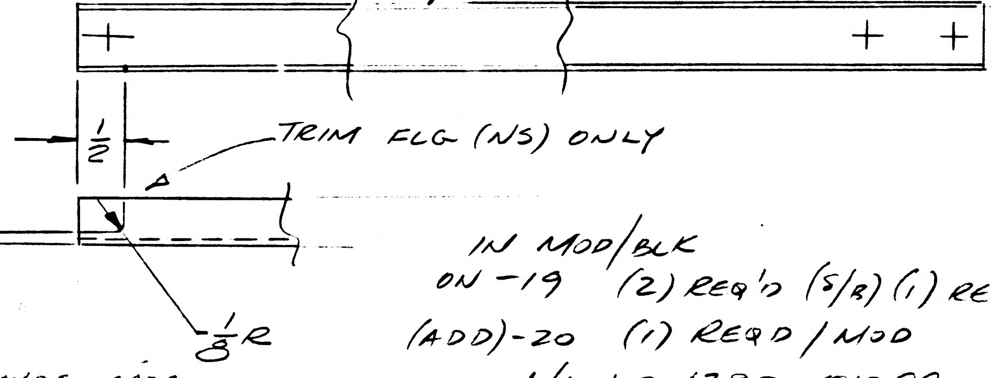
ENGINEERING ORDER

DWG NO. LDW280-11021		EO NO. B4
CONTROL INFO NO. LM-5-17877		

TRIM -19 AS SHOWN
(ADD) -20, SAME AS
-19 EXCEPT OPP.

1¢ T=E

-19 SHOWN
-20 (OPP) (ADD)



IN MOD/BLK
ON -19 (2) REQ'D (S/B) (1) REQ'D/MOD
(ADD)-20 (1) REQD/MOD
N/A LDW280-51299

-20 MAYBE MADE
BY REWORKING (1)-19
FIN# 76

RELEASED BY LIAISON

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
PROVIDE CLEARANCE ON DEAD FACE CONN. FITTING	IN M/B ADDED -20; ON -19 (1) REQ'D (WAS) (2) REQ'D; REVISED TRIM OF -19 BY ADDING CUTOUT.	(5) S/C 32

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM2(32)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG	RECORD EO	REWORK	SCRAP
✓		✓	

APPROVED BY								
DATE	1/22/68				1-24-68	1-22-68	1-27-68	1-25-68
	VD1	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	DOUBLER - ASCENT STAGE DEAD FACE	LDW280-11021	B4

ISSUED BY LIAISON M.D. REYES X86755 SECTION VD1 / F. DE RESPINIS GROUP NO. 335 PL 25

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11023-4	S	PANEL ASSY				SEE NOTE # 6	NONE	NONE	
		LDW280-11023-3	S	PANEL ASSY				SEE NOTE # 6	NONE	NONE	
		LDW280-11023-2	S	PANEL ASSY				SEE NOTE # 1,2,3,4 & 5	NONE	NONE	
		LDW280-11023-1	S	PANEL ASSY				SEE NOTE # 1,2,3,4 & 5	NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
LPC-19-2 (GRUMMAN) LPC-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-11023
A

SCALE NONE
SHEET 2

ENG 77.2 7-65

01

NAS 9-1100

LDW280-11023 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23040	LTA-3(13)	1 EA
PART NO. LDW280-11023-3&-4		GAEC SCH NO. 31-1	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28040	LEM-1(31)	1 EA
LEM	LDW280-28040	LTA-8(18)	1 EA
PART NO. LDW280-11023-1&-2		GAEC SCH NO. 31-1	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	A	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED B-B
LAST DASH NO. USED -4

GRUMMAN REL^c INFO B
PRIM NO. 215 | V(001) MP12A | JB...

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
±1/32 ±.010 ±1/2° ®
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	V.NARONIS 5-6-66	RELIABILITY	—
LAYOUT BY	S.KRAMEISEN		
CHECKED BY	EG 5-10-66		
GR.LEADER	J. Pusateri 5/20/66		
VEH.DES.INT			
STRUCTURES	EG BW 6/13	PROJ ENGR	Plunkett 3 Jun 66
STRUCTURES	H. Dorman 5/24	REL GROUP	Botti 6-7-66
WEIGHTS	W.G. Manders 6/3		

® GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

PANEL ASSEMBLY
ASCENT-CABIN WINDOW-INNER

SIZE B
CODE IDENT NO. 26512
LDW280-11023 B
SCALE NONE
SHEET 1.00 OF 4

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	SH CHG LTR	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
A	1	1,1.10,2 & 3							E.O. A1	INITIAL DRAWING RELEASE. PARTS MADE PER E.O. ADDED SH 1.10	LTA-3,8, LEM-1,2,-3	NOT	REQD EG	NARDVIS 5/8/66		
	2	1,1.10,2 & 3								FOR -1 & -2 N/A LDW280-28040 WAS N/A LDW 280-23040	LTA-8, LEM-1,2 & -3					
	3	1,1.10 & 3								IN F/D ADDED BUS BARS WITH ASSOCIATED DIMS & NOTE CALLOUTS. ADDED NOTE 7, 8 & ADDED TO NOTE #2C "EXCEPT THAT THE REQUIREMENTS OF PAR 3.2.7(b) SHALL BE 45 TO 76 WATTS PER PANEL AT 115 VAC. REMOVED NOTE 2D. IN SECT. A-A REMOVED PICTURE OF BUS BAR. IN M/B REMOVED EFFECTIVITY LEM-2 & LEM-3.	LTA-3, LTA-8 & LEM-1		✓	EG		
B	1	1.00, 1.10 & 3.00	7B 8B						EOB1	IN SECT. A-A .060 MAX. BOND FLOW WAS .010; 1.775/1.745 WAS 1.795/1.755, IN 7B .170/.110 WAS .140/.110.	LTA-8 LEM-1 & -3	✓		E. SUISENTI 7-12-66		

FOR CONTINUATION OF REVISIONS SEE SHEET

ENG 77.3 5-64

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

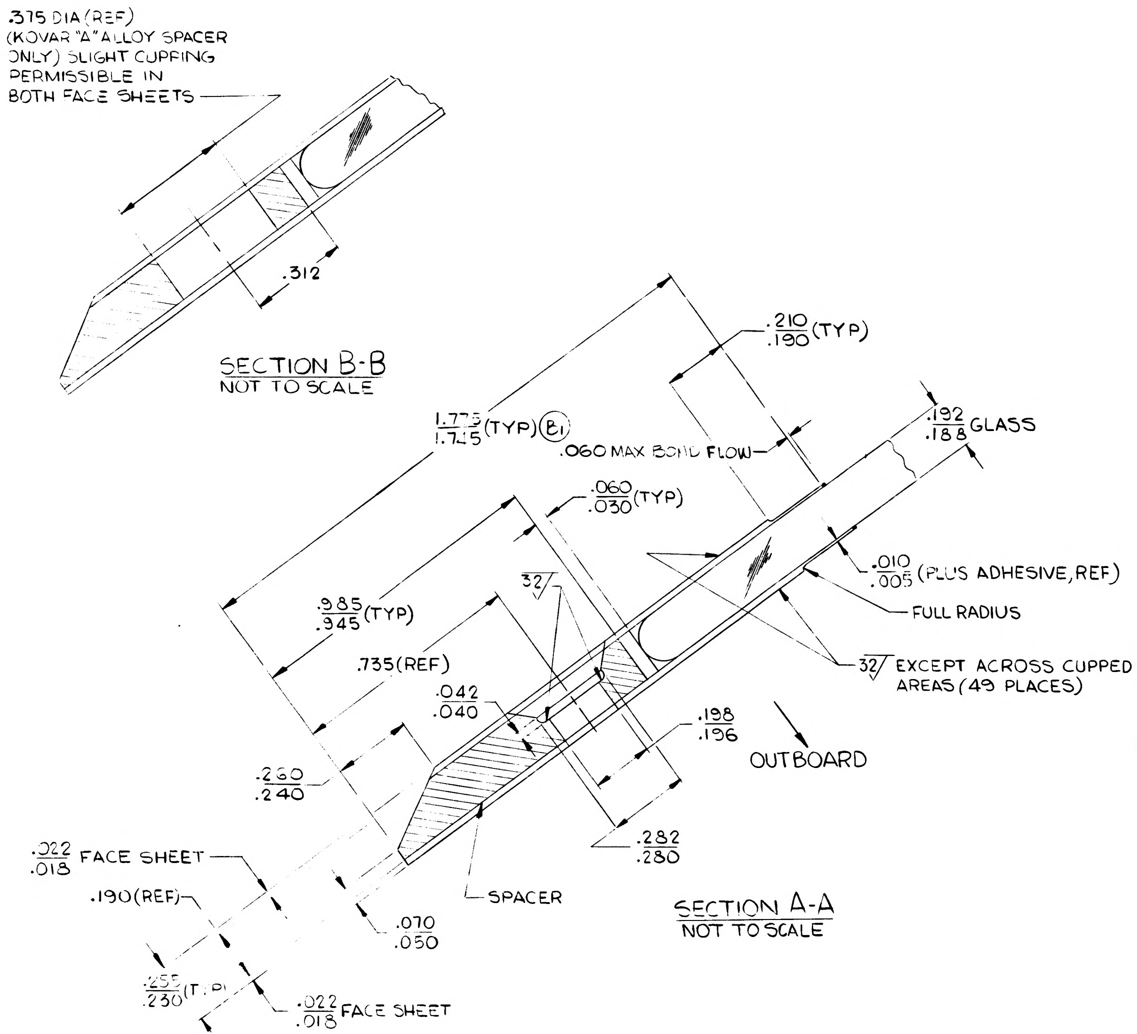
SIZE	CODE IDENT NO.		
B	26512	LDW280-11023	B

SCALE NONE

SHEET 1.10

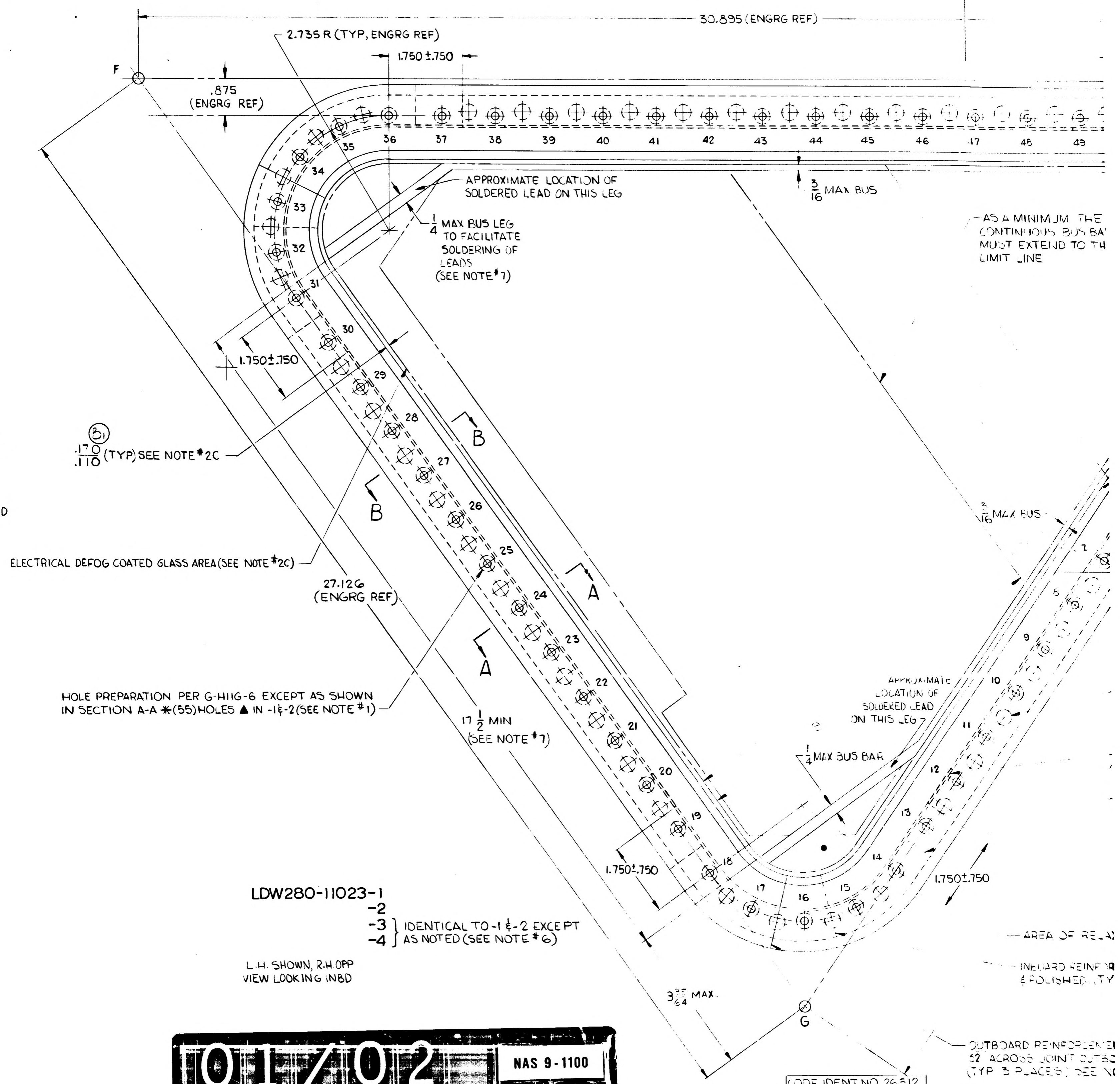
01

NAS 9-1100


.375 DIA (REF) (KOVAR "A" ALLOY SPACER ONLY) SLIGHT CUPPING PERMISSIBLE IN BOTH FACE SHEETS
.312
1.775 / 1.745 (TYP) (B1)
.060 MAX BOND FLOW
.210 / .190 (TYP)
.192 / .188 GLASS
.060 / .030 (TYP)
.010 / .005 (PLUS ADHESIVE, REF)
FULL RADIUS
32 EXCEPT ACROSS CUPPED AREAS (49 PLACES)
.985 / .945 (TYP)
.735 (REF)
.042 / .040
.198 / .196
OUTBOARD
.260 / .240
.282 / .280
.022 / .018 FACE SHEET
.190 (REF)
.070 / .050
SPACER
.255 / .230 (TYP)
.022 / .018 FACE SHEET

SECTION B-B
NOT TO SCALE

SECTION A-A
NOT TO SCALE


30.895 (ENGRG REF)
2.735 R (TYP, ENGRG REF)
1.750 ±.750
F
.875 (ENGRG REF)
APPROXIMATE LOCATION OF SOLDERED LEAD ON THIS LEG
3/16 MAX BUS
1/4 MAX BUS LEG TO FACILITATE SOLDERING OF LEADS (SEE NOTE #7)
AS A MINIMUM THE CONTINUOUS BUS BA MUST EXTEND TO TH LIMIT LINE
1.750±.750
(B1) .170 / .110 (TYP) SEE NOTE #2C
B
B
3/16 MAX BUS
ELECTRICAL DEFOG COATED GLASS AREA (SEE NOTE #2C)
27.126 (ENGRG REF)
A
A
HOLE PREPARATION PER G-H116-6 EXCEPT AS SHOWN IN SECTION A-A ✱(55) HOLES ▲ IN -1 & -2 (SEE NOTE #1)
17 1/2 MIN (SEE NOTE #7)
APPROXIMATE LOCATION OF SOLDERED LEAD ON THIS LEG
1/4 MAX BUS BAR
1.750±.750
1.750±.750
3 35/64 MAX.
G
AREA OF RELA
INBOARD REINFOR & POLISHED, TY
OUTBOARD REINFORCEMENT 32 ACROSS JOINT OUTBO (TYP 3 PLACES) SEE N
1
2
3
4
5
6
7
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11
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44
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47
48
49

LDW280-11023-1
-2
-3 } IDENTICAL TO -1 & -2 EXCEPT
-4 } AS NOTED (SEE NOTE #6)

L.H. SHOWN, R.H OPP
VIEW LOOKING INBD

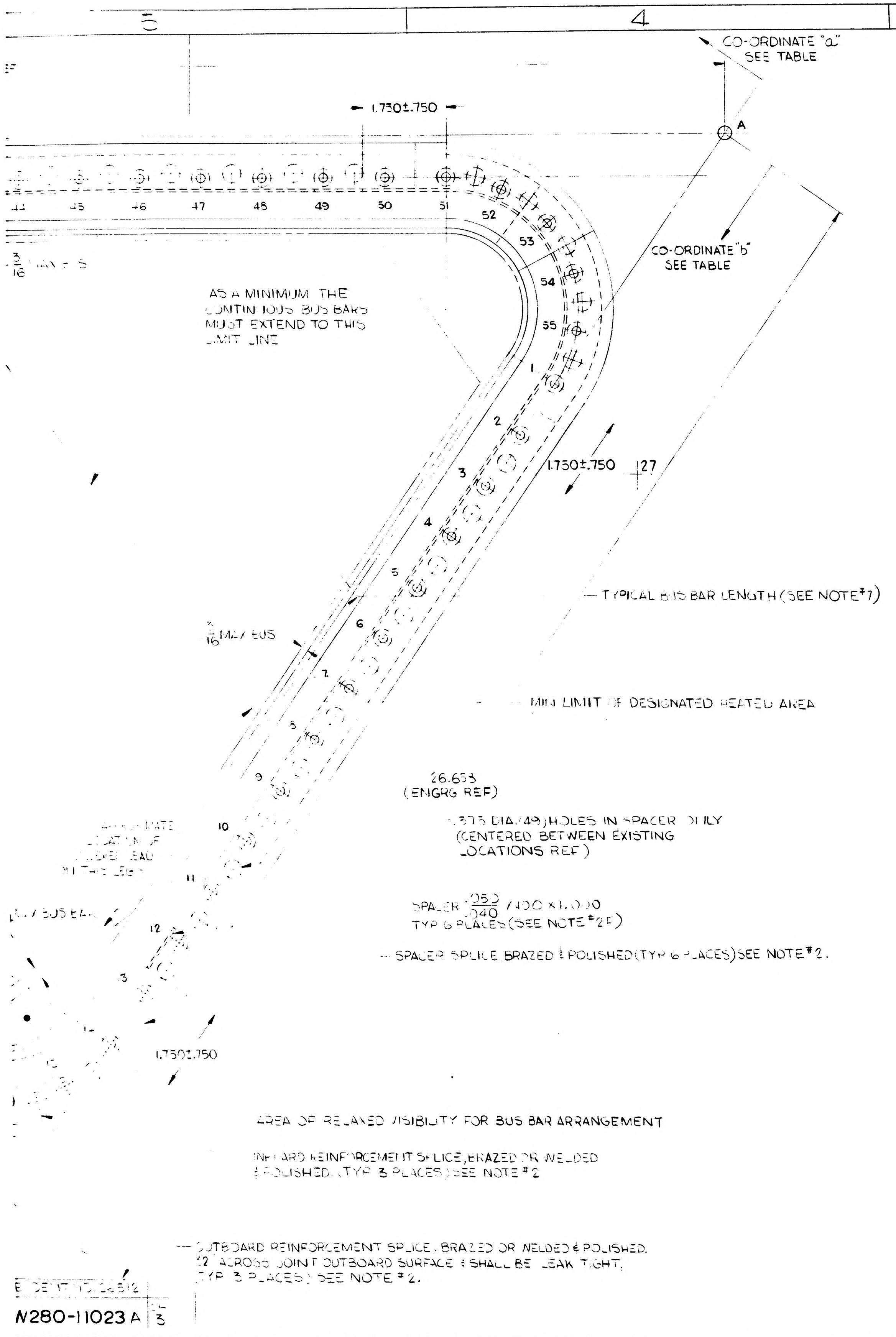
TABLE OF HOLE CO-ORDINATES

HOLE	"a" ±.002	"b" ±.002
1	0.000	6.241
2	0.000	7.512
3	0.000	8.783
4	0.000	10.053
5	0.000	11.324
6	0.000	12.595
7	0.000	13.865
8	0.000	15.136
9	0.000	16.407
10	0.000	17.677
11	0.000	18.948
12	0.000	20.219
13	0.000	21.490
14	0.000	22.760
15	0.308	24.022
16	1.164	24.999
17	2.374	25.471
18	3.665	25.332
19	4.881	24.892
20	6.097	24.452
21	7.313	24.013
22	8.529	23.573
23	9.745	23.133
24	10.961	22.693
25	12.176	22.253
26	13.392	21.813
27	14.608	21.374
28	15.824	20.934
29	17.040	20.494
30	18.256	20.054
31	19.472	19.614
32	20.477	18.975
33	21.115	17.969
34	21.264	16.787
35	20.898	15.654
36	20.084	14.784
37	19.031	14.064
38	17.977	13.344
39	16.923	12.624
40	15.869	11.904
41	14.816	11.184
42	13.762	10.464
43	12.708	9.744
44	11.654	9.024
45	10.601	8.304
46	9.547	7.583
47	8.493	6.863
48	7.439	6.143
49	6.386	5.423
50	5.332	4.703
51	4.278	3.983
52	3.185	3.544
53	2.009	3.605
54	0.967	4.154
55	0.254	5.091

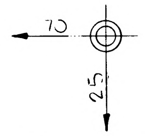
01/02

NAS 9-1100

CODE IDENT NO. 26512
LDW280-11023 A SH 3


5
4
CO-ORDINATE "a" SEE TABLE
A
1.750±.750
44
45
46
47
48
49
50
51
52
53
54
55
1
2
3
4
5
6
7
8
9
10
11
12
13
$\frac{3}{16}$ MAX BUS
AS A MINIMUM THE CONTINUOUS BUS BARS MUST EXTEND TO THIS LIMIT LINE
CO-ORDINATE "b" SEE TABLE
1.750±.750
127
TYPICAL BUS BAR LENGTH (SEE NOTE #7)
$\frac{3}{16}$ MAX BUS
MIN LIMIT OF DESIGNATED HEATED AREA
26.653 (ENGRG REF)
.375 DIA.(49) HOLES IN SPACER ONLY (CENTERED BETWEEN EXISTING LOCATIONS REF)
SPACER $\frac{.050}{.040}$ ×.400 ×1.000 TYP 6 PLACES (SEE NOTE #2F)
SPACER SPLICE BRAZED & POLISHED (TYP 6 PLACES) SEE NOTE #2.
1.750±.750
AREA OF RELAXED VISIBILITY FOR BUS BAR ARRANGEMENT
INBOARD REINFORCEMENT SPLICE, BRAZED OR WELDED & POLISHED. (TYP 3 PLACES) SEE NOTE #2
OUTBOARD REINFORCEMENT SPLICE, BRAZED OR WELDED & POLISHED. 12 ACROSS JOINT OUTBOARD SURFACE & SHALL BE LEAK TIGHT. (TYP 3 PLACES) SEE NOTE #2.
5
4

E IDENT NO. 26512
N280-11023 A 3



NOTES:

1. ON -1, -2, -3 & -4 FOR HOLES MARKED ▲, SEE DRAWING LDW280M10105 AND LDW280M10367 FOR CORRESPONDING HOLE PATTERN.
2. -1, -2, -3 & -4 MAY BE PURCHASED FROM CORNING GLASS WORKS, CORNING, N.Y. (14674), AND SHALL BE FABRICATED IN ACCORDANCE WITH LSM14-4401 EXCEPT 'MOR' SHALL BE 50,000 PSI, AND THE FOLLOWING:
   - A) EDGE ATTACHMENT-SHALL BE FABRICATED FROM KOVAR "A" ALLOY PER AMS 7728 DATED 7/15/63. FACE SHEETS SHALL BE COLD ROLLED, SPACERS SHALL BE HOT ROLLED AND BOTH BRIGHT ANNEALED.
   - B) EDGE ATTACHMENT SURFACE PREPARATION, GLASS PANEL SURFACE TREATMENT, AND STRUCTURAL BOND ADHESIVE SYSTEM-PER LSP280-8.
   - C) ELECTRICAL DEFOG COATING SYSTEM SHALL BE APPLIED TO OUTBOARD SURFACES OF GLASS PER LSP280-8 EXCEPT THAT THE REQUIREMENTS OF PAR 3.2.7(b) SHALL BE 45 TO 76 WATTS PER PANEL AT 115 VAC.
   - ~~D) HIGH EFFICIENCY ANTIREFLECTION COATING SYSTEM SHALL BE APPLIED TO INBOARD SURFACES OF GLASS PER LSM14-4402~~
   - E) FLATNESS-PANEL ASSYS -1, -2, -3 & -4 SHALL BE FLAT WITHIN ±.010.
   - F) TEFLON SPACERS (6) TO BE FABRICATED FROM TFE PER AMS 3651B.
   - G) BRAZE IN ACCORDANCE WITH MIL-B-7883.
   - H) WELD IN ACCORDANCE WITH MIL-W-8611.
3. PACKAGING SHALL IDENTIFY PROPER PART NUMBER. DO NOT AFFIX IDENTIFICATION ON PART PROPER.
4. LOFTED DELINEATIONS TO HAVE ±.015 TOLERANCE. ALL OTHER DIMENSIONS TO HAVE ±.005 TOLERANCE, EXCEPT AS NOTED.
5. NO TOOLING HOLES PERMITTED IN PARTS.
6. LDW280-11023-3 & -4 IDENTICAL TO -1 & -2 RESPECTIVELY EXCEPT THAT ELECTRICAL DEFOG COATING PER LSP280-8 IS NOT REQUIRED. IN THE EVENT THAT THE ELECTRICAL DEFOG COATING IS APPLIED, INSPECTION OF THIS COATING SHALL NOT BE REQUIRED AND DEFECTS IN THE COATING SHALL NOT BE CAUSE FOR REJECTION OF THE PART. -3 & -4 SHALL, HOWEVER, BE PROCESSED LIKE -1 & -2 TO INSURE SIMILARITY IN STRUCTURAL CHARACTERISTICS. IN ADDITION, -3 & -4 SHALL NOT REQUIRE THE HIGH EFFICIENCY ANTIREFLECTION COATING PER LSM14-4402.
7. ACTUAL LENGTH OF EACH BUS BAR, INCLUDING THE LEGS, WILL BE DETERMINED EMPIRICALLY DURING TEMPERATURE DISTRIBUTION AND POWER DISSIPATION TESTS. A GIVEN PANEL MAY OR MAY NOT HAVE EQUAL LENGTH BUS BARS. THE BUS LEGS ARE SHOWN AT MAXIMUM LENGTH. A MINIMUM PARALLEL SPACING OF 17 1/2" MUST EXIST BETWEEN THE BUS LEGS AS SHOWN.
8. -1 -2 -3 & -4 MAY BE PURCHASED FROM CORNING GLASS WORKS CORNING N.Y. (14674) WITHOUT MOUNTING HOLES.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	✓
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN .001 FULL INDICATOR READING	✓
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	✓
200 FOR ALL DRILLED HOLES	✓
REMOVE ALL BURRS. BREAK ALL EDGES .[illegible]	✓
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

DWG SIZE 28 X
PRINTING INFO ONLY
FULL SIZE SHEET AREA (30 X
PRINT TRIM LINE

LDW280-11023

LDW280-11023

02/02

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	H	26512	LDW280-11023	P
	SCALE FULL		SHEET 2	

FOR PHOTO REPRODUCTION

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	[redacted] APPD
RETRACED NO CHANGE LAST REVISION NO CHANGE ADDED SHS 1.10, 2.00 & 3.00 R.NISBET 10-5-66															
A	1	1.00, 1.10 & 3.00						E.O. A1	ON-13: ADD PILOT DRILL NO.40 (.097-.102) HOLES IN 5 PLACES. IN M/B: -5 (21) REQ WAS (20)	LTA-8, LM-1 & -2	✓		R NISBET 10-5-66		
	2	1.10 & 3.00						E.O. A2	IN FLD FOR -11 ADDED BEND RADIUS 1/8						
	3							E.O. A3	ON -7 1/4 WAS 11/16, 3/4 WAS 5/8, 5/8 WAS 21/32, 3/32 WAS 1/32.						
	4	1.00, 1.10, 2.00 & 3.00						E.O. A4	IN FLD & B/M ADDED: -9 SPT. ASSY., -19 BRACKET, -29 GANG CHANNEL (NAS.688P6-4). -5 19 REQD (WAS 21) REMOVED: -7 SPT. ASSY., -17 BRACKET, -27 GANG CHANNEL.			-5 -7, -17 -27			
	5	1.00, 1.10, 2.00 & 3.00						E.O. A5	FOR-5: CHANGED NO. REQ'D/MOD (18 WAS 21), REMOVED -3 REQUIREMENTS.			-3 -5			
B	1	1.10						E.O. B1	SUPERSEDED BY E.O. B2	NOT REQD	NOT	REQD	EG		10/21/66
	2	1.00, 1.10, 2.00 & 3.00						E.O. B2	SUPERSEDES E.O. B1, IN FLD & B/M REMOVED -25 CREATED -31	LTA-8, LM-1 & -2		-25			
	3	1.00 & 1.10						E.O. B3	IN MOD BLOCK ADDED REQUIREMENTS FOR (1) OF -1 N/A LDW280-54051 LM-4 THRU LM-15	LM-4 THRU LM-15	NOT	REQD			
	4	1.10, 2.00							REF E.O. A4 DESCRIPTION SHOULD INCLUDE GR500A-4C(2)	NOT REQD	NOT	REQD			
	5	1.00 & 1.10						A*B Ⓡ	REF E.O. A5 (18 WAS 21) SHOULD BE (18 WAS 19)						

CHG APPROVED

LTR	GROUP LDR	VEH.DES.INT.	STRUCTURE	STRUCTURE	WEIGHTS	PROJECT ENG
B			10-9			

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11024	B

SCALE NONE

SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

LDW280-11024 C

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54051	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
	LDW280-54051	LM-4(34)	1
LM	LDW280-53051	LM-3(33)	1

PART NO. LDW280-11024-1-1

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53051	LM-3(33)	1

PART NO. LDW280-11024-35

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28051	LM-2(32)	1
LM	LDW280-28051	LM-1(31)	1
LM	LDW280-28051	LTA-8(18)	1

PART NO. LDW280-11024-9 | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53051	LM-3(33)	1
LM	LDW280-28051	LM-2(32)	18
LM	LDW280-28051	LM-1(31)	18
LM	LDW280-28051	LTA-8(18)	18

PART NO. LDW280-11024-5 | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53051	LM-3(33)	1
LM	LDW280-28051	LM-2(32)	1
LM	LDW280-28051	LM-1(31)	1
LM	LDW280-28051	LTA-8(18)	1

PART NO. LDW280-11024-1 | GAEC SCH NO. 313

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	1.11	2.00	3.00				
REV	C	C	C	C	C				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO	
LAST DASH NO. USED	-1-1	PRIM NO. 215	[illegible]

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1/2°
ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100
LINE ITEM I
DOCUMENTATION TYPE II

DRAWN BY	P. MIHAN 3-22
LAYOUT BY	JOE CALANDRIA 3-25
CHECKED BY	J. PUSATERI 3-25
VEH. DES. INT.	W. BISCHOFF 3-25
STRUCTURES	F.E.B. B.N 4-1
STRUCTURES	HILDERMAN 4-1
WEIGHTS	D. ROBESCH 4-4
PROJ ENGR	WALBER 4-4-66
REL GROUP	A CARAMANICA 4-6-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET ASSEMBLY
ASCENT STAGE~CABIN~EQUIP. LINES

SIZE	CODE IDENT NO.		
B	26512	LDW280-11024	C

SCALE NONE
SHEET 1.00 OF 5

ENG 77.1 12-65

SUPERSEDES LDW280-11024 N.C. 4-6-66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	[illegible] APPD
											REWORK	SCRAP			
	RETRACED NO CHANGE LAST REVISION NO CHANGE ADDED SHS 1.10, 2.00 & 3.00 R.NISBET 10-5-66														
A	1	1.00, 1.10 & 3.00						E.O. A1	ON-13: ADD PILOT DRILL NO.40 (.097-.102) HOLES IN 5 PLACES. IN M/B: -5 (21) REQ WAS (20)	LTA-8, LM-1 & -2	✓		R NISBET 10-5-66		
	2	1.10 & 3.00						E.O. A2	IN FLD FOR -11 ADDED BEND RADIUS 1/8						
	3							E.O. A3	ON -7 1/4 WAS 11/16, 3/4 WAS 5/8, 5/8 WAS 21/32, 3/32 WAS 1/32.						
	4	1.00, 1.10, 2.00 & 3.00						E.O. A4	IN FLD & B/M ADDED: -9 SPT. ASSY., -19 BRACKET, -29 GANG CHANNEL (NAS.688P6-4). -5 19 REQD (WAS 21) REMOVED: -7 SPT. ASSY., -17 BRACKET, -27 GANG CHANNEL.			-5 -7, -17 -27			
	5	1.00, 1.10, 2.00 & 3.00						E.O. A5	FOR -5: CHANGED NO. REQ'D/MOD (18 WAS 21), REMOVED -3 REQUIREMENTS.			-3 -5			
B	1	1.10						E.O. B1	SUPERSEDED BY E.O. B2	NOT REQD	NOT	REQD			
	2	1.00, 1.10, 2.00 & 3.00						E.O. B2	SUPERSEDES E.O. B1, IN FLD & B/M REMOVED -25 CREATED -31	LTA-8, LM-1 & -2		-25			
	3	1.00 & 1.10						E.O. B3	IN MOD BLOCK ADDED REQUIREMENTS FOR (1) OF -1 N/A LDW280-54051 LM-4 THRU LM-15	LM-4 THRU LM-15	NOT	REQD			
	4	1.10, 2.00							REF E.O. A4 DESCRIPTION SHOULD INCLUDE GR500A-4C(2)	NOT REQD	NOT	REQD			
	5	1.00 & 1.10						A&B ②	REF E.O. A5 (18 WAS 21) SHOULD BE (18 WAS 19)				EG		
C	1	1.00 & 1.10						LEO280-339	ON -1 & -5, IN MOD/BLK ADDED LM-3 (33) EFF	LM-3	NOT	REQD	M. MARKARIAN 5-23-67		
	2							EOC2	CORRECTED CHANGE NO. FOR LEO280-339, C1 WAS B4	NOT REQD					
	3	1.00, 1.10, 2.00 & 3.00						EOC3	ADDED -35, -33 AND ADDITIONAL REQUIREMENTS FOR -31	LM-3					
	4							EOC4	IN F/D & B/M ADDED -1-1 ASSY & -11-1 BRACKET, ADDED CALLOUT GR500A 4C(2), ADDED N/A FOR -1-1, LDW280-53051 MOD. NO. LM-3 & LDW280-54051, FOR MOD NO. LM-4 THRU LM-15 REMOVED -1 ASSY FROM N/A LDW280-54051 FOR LM-4(34) THRU LM-15(45)	LM-3 THRU LM-15		-1	JG		

CHG APPROVED

LTR	GROUP LDR	VEH.DES.INT	STRUCTURE	STRUCTURE	WEIGHTS						
B											
C											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11024	C ②

SCALE NONE

SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
C	5	1.10 & 3.00	4H					LE0280-385	ON INCORPORATION OF EOC3, ADDED -33 CALLOUT "SAME AS -15 EXCEPT AS SHOWN" (ADDED SHEET 1.11)	LM-3	NOT	REQD	MARKARIAN 5-23-67		
	6	1.11, 2.00 & 3.00	4DG 7C 8F					LE0280-477	FOR -1, -5, -9, -35 & -1-1, GR501A-4B RIVETS WAS GR500A-4C RIVETS	LM-7 THRU LM-15	✓				

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURE	STRUCTURE	WEIGHTS
C					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11024	C
SCALE NONE			SHEET 1.11

ENG 77.16 3-66

01

NAS 9-1100

		2	2	2	2	2		GR501A-4B	E	RIVET	GRUMMAN STD						
			1		1			LDW280-11024-31		GANG CHANNEL	NAS-688P6-2	STD PART		ACTUAL LG 1 3/4	NONE	NONE	
				1				-29		GANG CHANNEL	NAS-688P6-4	STD PART		ACTUAL LG 2 15/16	NONE	NONE	
		1				1		-21		GANG CHANNEL	NAS-688P6-4	STD PART		ACTUAL LG 2 15/16	NONE	NONE	
			1					-33		BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040×2 1/8×2	NONE	88	
				1				-19		BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040X2 1/4X3 5/8	NONE	88	
					1			-15		BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040X2 1/8X2	NONE	88	
		1						-11-1		BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040×2 1/8×2	NONE	88	
						1		-11		BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040X2 1/4X3 1/2	NONE	88	
								-35		BRACKET ASSY					NONE	NONE	
								-9									
								-5									
								-1-1									
								LDW280-11024-1	E	BRACKET ASSY					NONE	NONE	
		-1-1	-35	-9	-5	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		QTY PER ASSEMBLY															

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11024	C

SCALE NONE

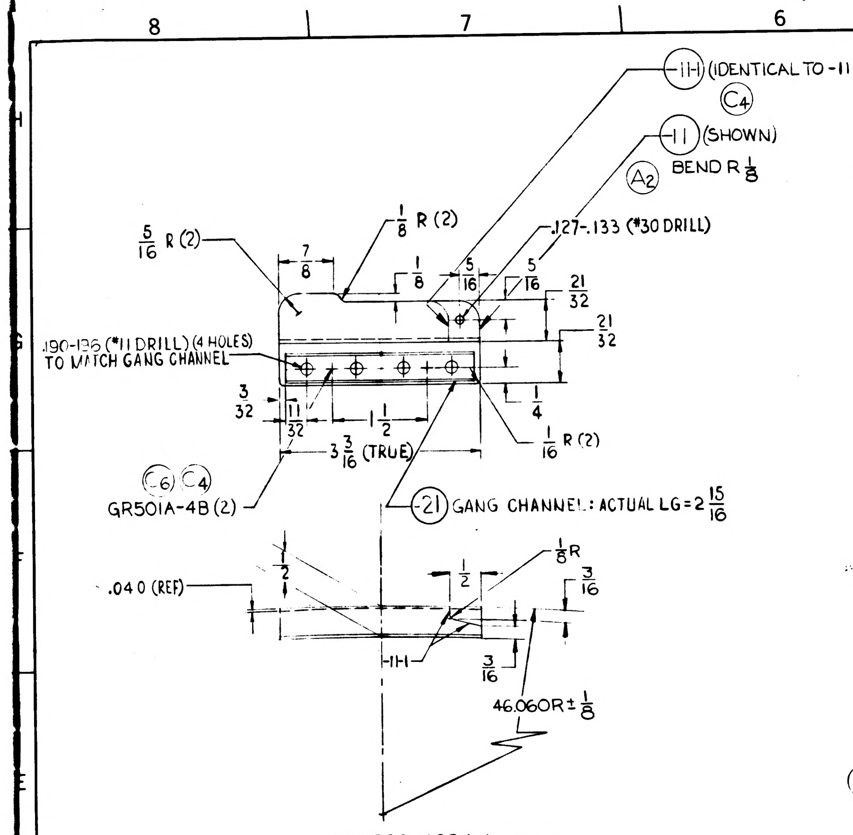
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

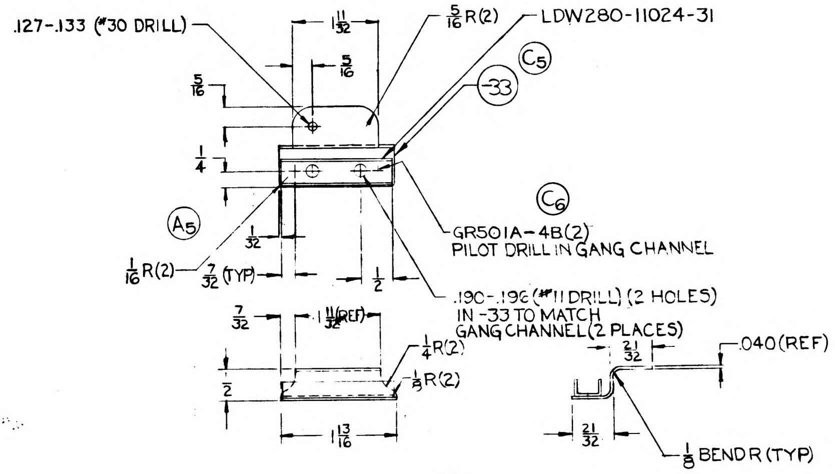
NOTES:
1. INSTALL FASTENERS PER LSP-14-15303



-1H (IDENTICAL TO -11 EXCEPT AS SHOWN)
C4
-11 (SHOWN)
A2
BEND R 1/8
5/16 R (2)
7/8
1/8 R (2)
1/8
5/16
.127-.133 (#30 DRILL)
5/16
21/32
21/32
.190-.196 (#11 DRILL) (4 HOLES) TO MATCH GANG CHANNEL
3/32
11/32
1 1/2
1/4
1/16 R (2)
3 3/16 (TRUE)
C6 C4
GR501A-4B (2)
-21 GANG CHANNEL: ACTUAL LG = 2 15/16
.040 (REF)
1/2
1/2
1/8 R
3/16
-1H
3/16
46.060R ± 1/8

LDW280-11024-1 ASSY

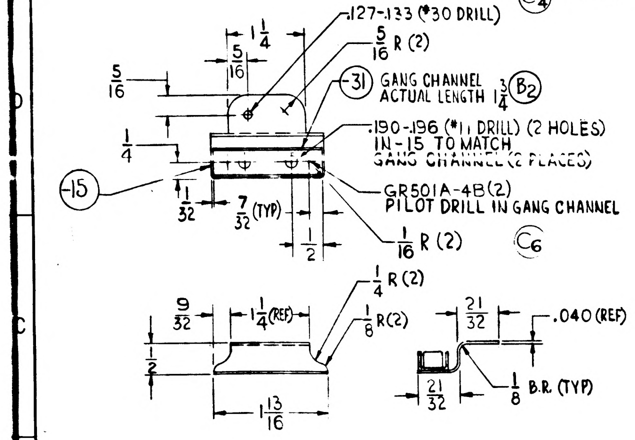
-1-1 ASSY (IDENTICAL TO -1 EXCEPT AS SHOWN) C4



.127-.133 (#30 DRILL)
11/32
5/16
5/16 R (2)
LDW280-11024-31
C5
-33
5/16
1/4
C6
GR501A-4B (2) PILOT DRILL IN GANG CHANNEL
A5
1/32
1/16 R (2)
7/32 (TYP)
1/2
.190-.196 (#11 DRILL) (2 HOLES) IN -33 TO MATCH GANG CHANNEL (2 PLACES)
7/32
1 1/4 (REF)
1/4 R (2)
1/8 R (2)
1/2
1 13/16
.040 (REF)
21/32
21/32
1/8 BEND R (TYP)

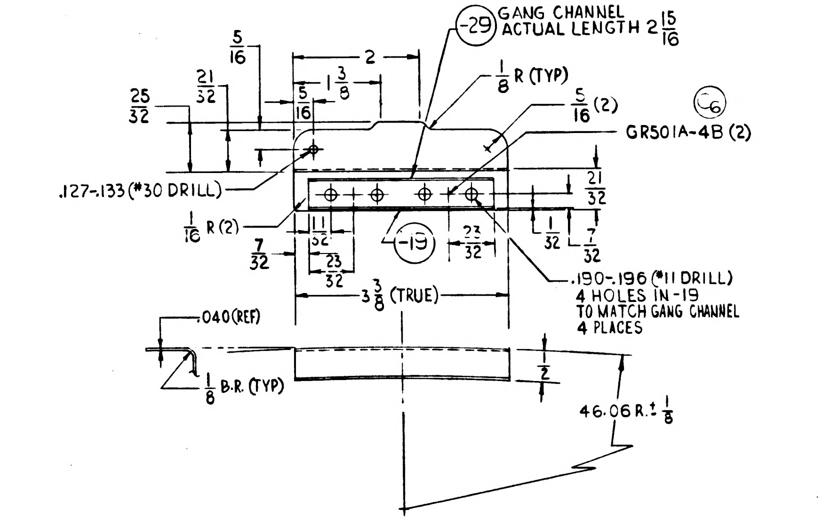
LDW280-11024-35 (C3)

(A4)



1 1/4
5/16
.127-.133 (#30 DRILL)
5/16 R (2)
5/16
-31 GANG CHANNEL ACTUAL LENGTH 1 3/4
B2
1/4
.190-.196 (#11 DRILL) (2 HOLES) IN -15 TO MATCH GANG CHANNEL (2 PLACES)
-15
1/32
7/32 (TYP)
GR501A-4B (2) PILOT DRILL IN GANG CHANNEL
1/2
1/16 R (2)
C6
9/32
1 1/4 (REF)
1/4 R (2)
1/8 R (2)
21/32
.040 (REF)
1/2
1 13/16
21/32
1/8 B.R. (TYP)

LDW280-11024-5



5/16
25/32
21/32
5/16
2
1 3/8
-29 GANG CHANNEL ACTUAL LENGTH 2 15/16
1/8 R (TYP)
5/16 (2)
C6
GR501A-4B (2)
.127-.133 (#30 DRILL)
1/16 R (2)
7/32
11/32
23/32
-19
23/32
1/32
7/32
21/32
3 3/8 (TRUE)
.190-.196 (#11 DRILL) 4 HOLES IN -19 TO MATCH GANG CHANNEL 4 PLACES
.040 (REF)
1/8 B.R. (TYP)
1/2
46.06 R. ± 1/8

(A4) LDW280-11024-9

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
LM	SIZE F	CODE IDENT NO. 26512	LDW280-11024	C
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

LDW280-11024

LDW280-11025 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28123	TEST RIG	2
LEM	LDW280-23123	LEM-6 (36)	1
		LEM-5 (35)	1
		LEM-4 (34)	1
	LDW280-23123	LEM-3 (33)	1
	LDW280-28123	LEM-2 (32)	1
	LDW280-28123	LEM-1 (31)	1
	LDW280-28123	LTA-8 (18)	1
LEM	LDW280-23123	LTA-3 (13)	1
PART NO. LDW280-11025-11		GAEC SCH NO. 32-2	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A		
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -11

GRUMMAN REL INFO

PRIM NO. 215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY H.DEUTSCH 3-28-66
LAYOUT BY G.ROCKLEIN
CHECKED BY WCG 4/5/66
GR.LEADER 4/6/66
VEH DES INT 4/7
STRUCTURE FB SW 4/7
STRUCTURE Hilderman 4/7
WEIGHTS Lamonte 4-12
RELIABILITY
PROJ ENGR 4-13-66
REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP
ASCENT STAGE MID-SECTION
WATER MODULE

SIZE B
CODE IDENT NO. 26512
LDW280-11025 A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A									SH*1.00 OF 4 WAS 1.00 OF 3 ADDED SH 1.10	NOT REQ'D	NOT	REQ'D	J. BRODA 6-8-66		
	1	1 & 1.10						LEO 280-91 (8)	ADD EFFECTIVITY FOR VENDOR TEST RIG	VENDOR-TEST					

CHG APPROVED

LTR	GROUP LDR	VEH.DES.INT	STRUCTURE	STRUCTURE	WEIGHTS	RELIABILITY
A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11025	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11025-11	E	CLIP	AL ALLOY SH	QQ-A-250/4	2024-T3	.040X3¼X3½	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP 14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11025

SCALE NONE

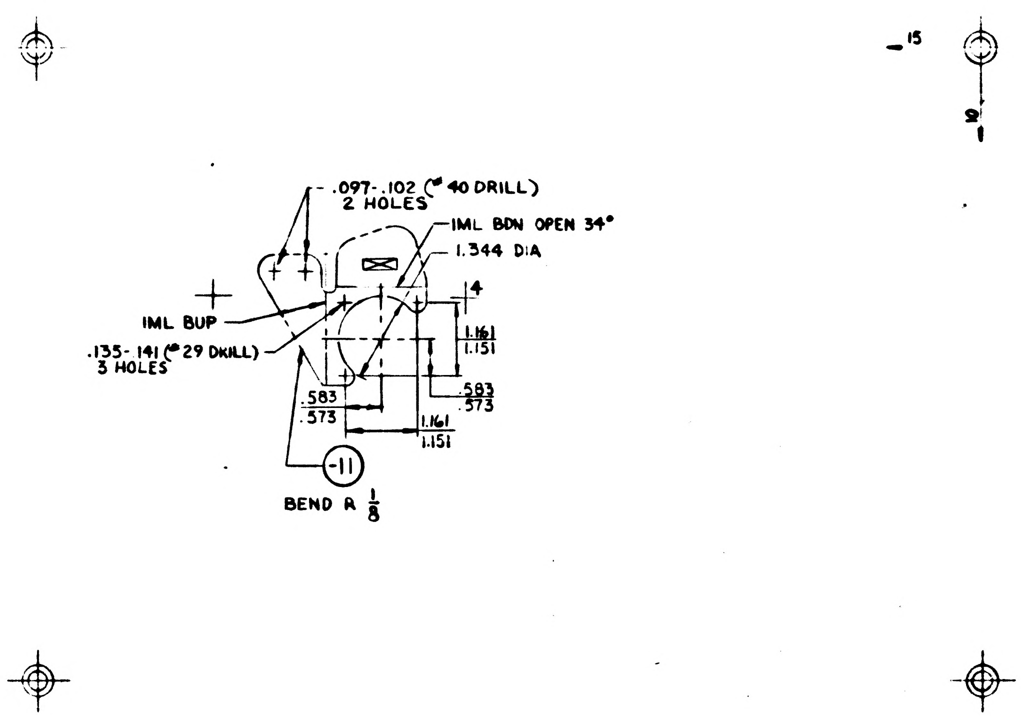
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTE
1. NO TOOLING HOLES PERMITTED IN PARTS.



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG	
[illegible] STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES [illegible] TO [illegible] ± [illegible] [illegible] TO .250R ± [illegible] OVER .250R ± [illegible]	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± [illegible] PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE [illegible] TO [illegible] MAX [illegible] THICKNESS TO BE [illegible] ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES [illegible]	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED 15	
SYMBOL ƒ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF ALL NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OF END ITEM	SIZE	CODE IDENT NO	
LEM	C	26512	LDW280-11025
	SCALE FULL		SHEET 3.00

LDW280-11025

FOR PHOTO REPRODUCTION

K2

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 91
CONTROL INFO NO. LEM 330- 468

DWG NO	CHG NO	TITLE
✓ LDW 280-10617-11,-13,-15,-17,-19 *	A1	SUPPORT
✓ LDW 280-10758-11,-13,-15,-17,-19 *	A1	PANEL
✓ LDW 280-10759-11,-13,-15,-17,-19 *	A1	CHANNEL
✓ LDW 280-10760-11,-13,-15,-17,-19 *	A1	ANGLE
✓ LDW 280M10834-1 *	A1	FITTING
✓ LDW 280M10835-1 *	A1	FITTING
✓ LDW 280M10836-1 *	A1	FITTING
✓ LDW 280M10837-1 *	A1	FITTING
✓ LDW280-11025-11 *	A1	CLIP

FOR THE PRECEDING PARTS ADD THE FOLLOWING INFORMATION TO THE MODEL BLOCK.

LEM	LDW280-28123	TEST RIG	2
MODEL	NEXT ASSY	MODULE	REQD PER MODULE

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: TO ADD EFFECTIVITY FOR VENDOR TEST

DESCRIPTION OF EO: FOR * ADD EFFECTIVITY FOR VENDOR TEST RIG

GAEC EO RELEASE: C
RIG LE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		VENDOR TEST	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO ☐

DISPOSITION OF PARTS: NOT REQD (REWORK / SCRAP)

APPROVED BY									
DATE	4-13-66	4/15/66						4-15	4-1? 66
	SECT ENG	LDT ~~SUPPORT~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG		PROJ ENGRG	~~GOVT~~

PRIORITY: C
DRAWING TITLE:
DRAWING NO. LEO 280
EO NO. 91

ISSUED BY J ANZALONE 4/13/66 SECTION ENVIRON. CONTROL GROUP NO. 330 PL 35

01
NAS 9-1100

24 GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO LE0280 | EO NO. 296
CONTROL INFO NO. LDW280 A 0658

*

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS* THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

	DRAWING NUMBER	CHANGE NUMBER	TITLE
✓	LDW280-10981	A1	SEE DRAWING
✓	-11015	B1	
✓	-11025	B1	
✓	-11028	B4	
✓	-11035	A2	
✓	-11036	B1	
✓	-11039	A1	
✓	-11045	A1	
✓	-11048	B1	
✓	-11050	C1	
✓	P11055	B2	
✓	P11056	C2	
✓	-11067	B1	
✓	-11068	B1	
✓	H11069	B1	
✓	-11070	C1	
✓	-11071	A1	
✓	-11072	A1	
✓	-11073	A2	
✓	P11087	B1	
✓	-11103	A1	
✓	-11116	A1	
✓	-11119	B1	
✓	-11123	A2	
	-11128	C1	
✓	-11149	A1	
✓	-11153	A1	
✓	-11154	A2	
✓	-11155	A1	
✓	-11156	B1	
	-11157	B2	
	LDW280-11160	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE: E 10-8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38) LEM-9(39)	
LEM		LEM-10(40) LEM-11(41) LEM-12(42)	
LEM		LEM-13(43) LEM-14(44) LEM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

APPROVED BY	DATE		
V.D.I.	9/23/66		
SUPPORT			
RELIAB. GROUP			
GROUP LEADER	—	—	
STRESS GROUP		9.9	
LIAISON ENGRG			
PROJ ENGRG	RMC	10-6-66	
		10-3-66	

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO.: LE0280

EO NO.: 296

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 35

01
NAS 9-1100

B

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER *

DWG. NO. LDW 280-11025 | EO NO. B2
CONTROL INFO NO. LDW 280 A-7462

RESTRICT EFFECTIVITY OF -11 TO: LTA-8 (18), LTA-3 (13)
LM-1 (31), (1 EACH REQ'D)
TEST RIG (2 REQ'D)

EFFECTIVITY OF -11 WAS LTA-8(18), LTA-3(13), LM-1(31) THRU LM-15(45), AND TEST RIG (2 REQ'D)

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☑	LCD # 1429, CCA 581	3

REASON FOR EO
To Provide High Pressure Water to Water Hose Assy per LCD # 1429

DESCRIPTION OF EO
Restricted -11 Effectivity to LTA-8(18), LTA-3(13), LM-1(31) & Test Rig (WAS LTA-8(18), LTA-3(13), LM-1(31) Thru LM-15(45) & Test Rig)

GAEC EO RELEASE
JK 6/19/67

MODEL	EFFECTIVITY		
	~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	~~SUB CONTRACTOR NO.~~
LM	LM-2 (32)	THRU LM-15	(45)

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓			✓
REVISE DWG	RECORD EO	REWORK	SCRAP

APPROVED BY								
DATE	06/10/67			6/10/67	6/14/67		6/14/67	6/17/67
2	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	CLIP - ASCENT STAGE, MID SECTION, WATER MODULE	LDW 280-11025	B2

ISSUED BY Geo. W. Rocklein x7033 6/9/67 SECTION Veh. Des. Int. GROUP NO. 335 PL 25

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11025 EO NO. B3
CONTROL INFO NO. LDW280B0549

IN B/M & M/B FOR -11:

REMOVE: LTA-8(18) EFF. QUANTITY ~ 1 REQ'D.

LFM

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD 2364

REASON FOR EO: TO PROVIDE HIGH PRESSURE WATER TO LSC330-416 HOSE ASSY.

DESCRIPTION OF EO: IN B/M & M/B FOR -11: REMOVED: LTA-8(18) EFFECTIVITY

GAEC EO RELEASE: 11/27/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM	LFM 82	LTA-8(18)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO ☐
DISPOSITION OF PARTS: REWORK ☐ SCRAP ✓

	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
APPROVED BY	JaP			JW	CW			
DATE	11/27/67			11/27/67	11/27/67		11/27/67	11/29/67

PRIORITY: C
DRAWING TITLE: CLIP ~ ASCENT STAGE, MID SECTION WATER MODULE
DRAWING NO.: LDW280-11025
EO NO.: B3

12-1
ISSUED BY CMGREEN X1392 SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11027 A

PART NO. LDW280-11027-15

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54128	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
	LDW280-54128	LM-4(34)	1
	LDW280-28128	LTA-8(18)	1
LM		QUALTEST(72)	3

PART NO. LDW280-11027-13

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28128	LTA-8(18)	1
LM		QUALTEST(72)	3

PART NO. LDW280-11027-11

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO. 32-5	REQD PER MODULE OR END ITEM
LM	LDW280-28128	LTA-8(18)	1
LM		QUALTEST(72)	3

WORK PKG FUNCTION NO. 110 3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO A		
LAST DASH NO. USED	-15	PRIM NO. 215	JK(001) MP-5A	-3/16/7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.010 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	BRANDT 3/23/66	RELIABILITY	
LAYOUT BY			
CHECKED BY CNB	A		
GRP LDR	PHILIPS 3/24/66		
VEH DES INT	W. BISCHOFF 3/25		
STRUCTURES	FEB BW 3/26	PROJ ENGR	J. ALBER RNC 3/29
STRUCTURES	R. HILDERMAN 3/26	REL GROUP	CHUCKIFF 3/30
WEIGHTS	D. ROBESCH 3/29		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT-MID-SECTION+Y17.25
CABIN PRESSURE SWITCH

SIZE	CODE IDENT NO.		
B	26512	LDW280-11027	A
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 12-65

SUPERSEDES LDW280-11027 NO CHANGE 3-30-66

01 NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE LAST REV NO CHANGE LOFTED DWG WAS DIM. ADDED SH 1.10, 2.00 & 3.00 . J. GARRAFFO 2-24-67						
A	1	1.00 & 1.10					✓	LEO280-114	ON -11, -13 & -15 ADDED QUAL TEST (72) REQUIREMENTS	QUAL TEST (72)	NOT	REQD	GARRAFFO 3-16-67		
	2	1.00 1.10						EO-A2	ADDED -15 REQUIREMENTS IN MODEL BLOCK N/A LDW280-54128, EFF LM 4 THRU LM 15	LM-4 (34) THRU LM-15 (45)					
	3	1.00 1.10		DCRF 323-1197				EO-A3	Ⓡ FOR -11, -13 & -15 DELETE LM-1 (31) & LM-2 (32) EFFECTIVITIES AS	LM-1 (31) LM-2 (32)		-11 -13 -15			

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY
	A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11027	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	LDW280-11027-15	E		FILLER	AL ALLOY SH	QQ-A-250/4	2024-T3	.040x 2x3	NONE	88	
	LDW280-11027-13	E		BRACKET	AL ALLOY SH	QQ-A-250/4	2024	.040x 4 x 4	T3/T42	88	
	LDW280-11027-11	E		BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040x 4 x 4	NONE	88	

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14.9030
						T3/T42	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE B | CODE IDENT NO. 26512 | LDW280-11027 | A

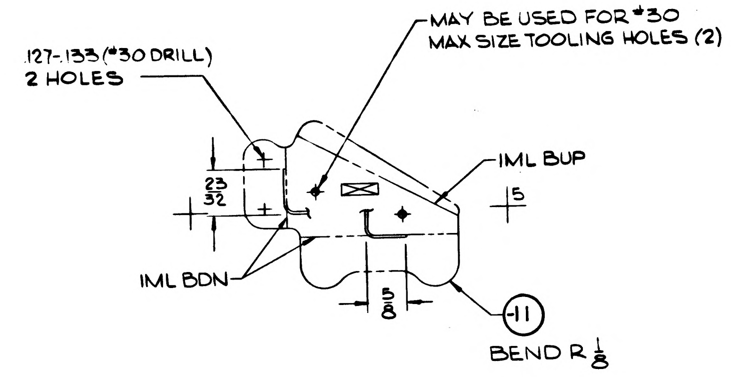
SCALE NONE | SHEET 2.00

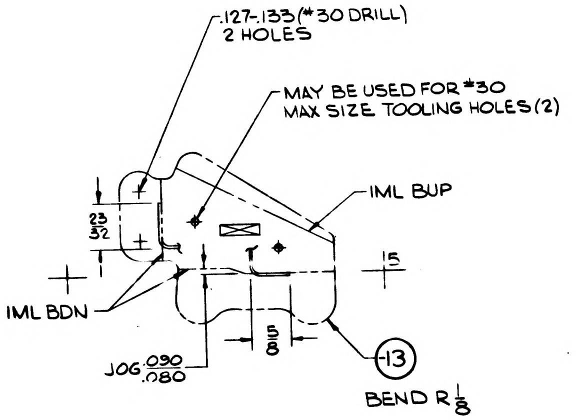
ENG 77.2 5-64

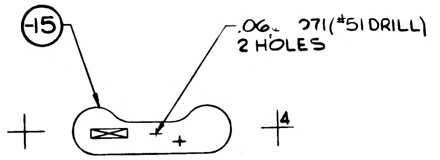
01

NAS 9-1100

NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS EXCEPT AS SHOWN.


MAY BE USED FOR #30
MAX SIZE TOOLING HOLES (2)
.127-.133 (#30 DRILL)
2 HOLES
23/32
IML BUP
15
IML BDN
5/8
-11
BEND R 1/8


.127-.133 (#30 DRILL)
2 HOLES
MAY BE USED FOR #30
MAX SIZE TOOLING HOLES (2)
23/32
IML BUP
15
IML BDN
5/8
JOG .090/.080
-13
BEND R 1/8


-15
.06_ .071 (#51 DRILL)
2 HOLES
4

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM: LM	SIZE: D	CODE IDENT NO.: 26512	LDW280-11027	A
	SCALE FULL			SHEET 3.00

LDW280-11027 A

2 FOR PHOTO REPRODUCTION 1

K2

NAS 9-1100

QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	LDW280-11028-17	E		ANGLE	AL ALLOY EXTR	QQ-A-200/3	2024-T3511	DIE# 30845× 2¼	NONE	88	
	LDW280-11028-15	E		ANGLE	AL ALLOY SH	QQ-A-250/4	2024-T3	.050×2×2	NONE	88	

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC
						38	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11028	B

SCALE NONE

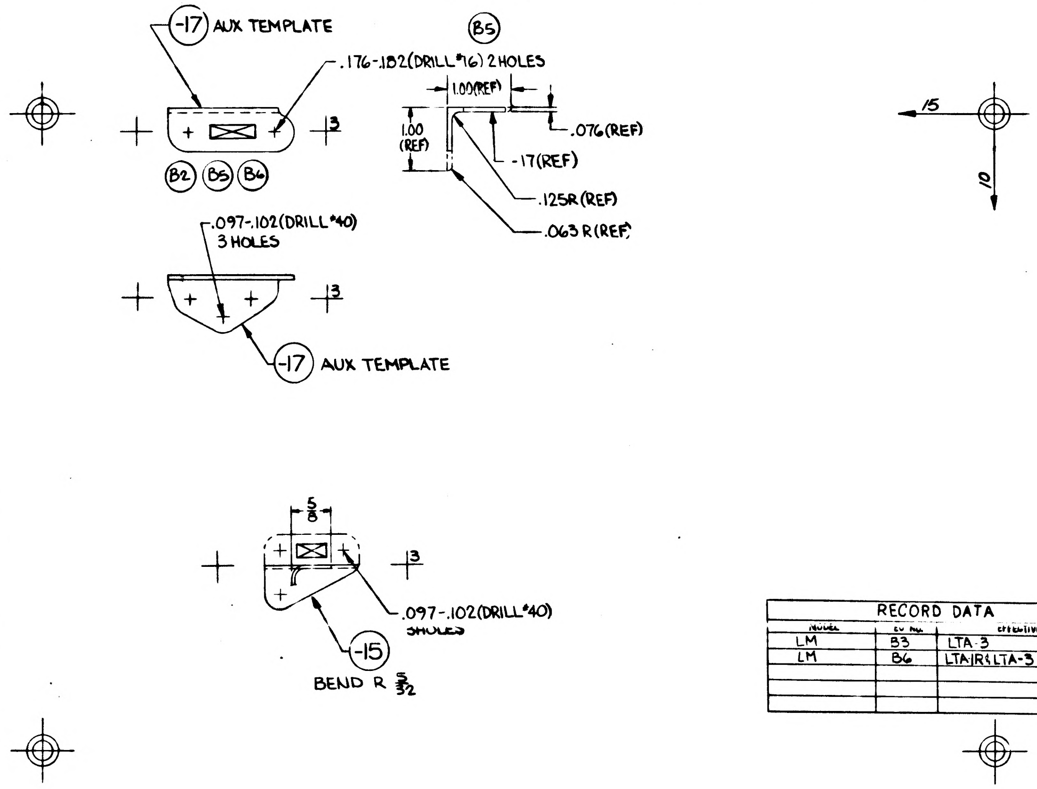
SHEET 2.00

ENG 77.2 5-64

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS


-17 AUX TEMPLATE
.176-.182(DRILL #16) 2 HOLES
B5
1.00(REF)
1.00 (REF)
.076(REF)
-17(REF)
.125R(REF)
.063 R(REF)
B2 B5 B6
3
.097-.102(DRILL #40) 3 HOLES
-17 AUX TEMPLATE
15
10
5/8
.097-.102(DRILL #40) 3HOLES
-15
BEND R 5/32

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

RECORD DATA

MODEL	EO NO.	EFFECTIVITY
LM	B3	LTA-3
LM	B6	LTA-1R & LTA-3

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
	SIZE C	CODE IDENT NO. 26512	LDW280-11028	B
MODEL OR END ITEM LM	SCALE FULL		SHEET 3.00	

LDW280-11028 B

LDW280-11028 B

FOR PHOTO REPRODUCTION K

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NAS 9-1100

LDW280-11028 C

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23069	ZERO "G" TEST	2
LM	LDW280-23069	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
		LM-4(34)	1
		LM-3(33)	1
	LDW280-23069	LTA-3(13)	1
	LDW2F0-28069	LM-2(32)	1
	LDW280-28069	LM-1(31)	1
	LDW280-28069	LTA-8(18)	1
LM	LTM280-26631	LTA-1R(14)	1
PART NO. LDW280-11028-17		GAEC SCH NO. 31	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW230-54083	ZERO "G" TEST	1
LM	LDW280-54083	LM-15(45)	2
		LM-14(44)	2
		LM-13(43)	2
		LM-12(42)	2
		LM-11(41)	2
		LM-10(40)	2
		LM-9(39)	2
		LM-8(39)	2
		LM-7(37)	2
		LM-6(36)	2
		LM-5(35)	2
	LDW280-54083	LM-4(34)	2
	LDW280-23083	LM-3(33)	2
	LDW280-23083	LTA-3(13)	2
	LDW280-28083	LM-2(32)	2
	LDW280-28083	LM-1(31)	2
	LDW280-28083	LTA-8(18)	2
LM	LTM280-26652	LTA-1R(14)	2
PART NO. LDW280-11028-15		GAEC SCH NO. 31	

WORK PKG FUNCTION 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	C	C	B		B				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO	
		PRIM NO.	JK(00)
LAST DASH NO. USED	-17	215	ME-3A-11/21/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/64 ± .010 ± 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100
LINE ITEM
DOCUMENTATION TYPE II

DRAWN BY	OLIVER/MANOS 3-25-66	WEIGHTS	D. ROBESCH 3-30-66
LAYOUT BY	OLIVER/MANOS 3-25-66	RELIABILITY	
CHECKED BY	CNB		
GRP LDR	J. PUSATERI 3-26-66		
VDI	W. BISCHOFF 3-27-66		
STRUCT	F. BUNCE 3-28-66	PROJ ENGR	J. ALBER 3-30-66
STRUCT	R. HILDERMAN 3-28-66	REL GROUP	C. BOTTI 3-31-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE - HATCH
TRANSDUCER MOUNTING

SIZE	CODE IDENT NO.		
B	26512	LDW280-11028	C
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

SUPERSEDES LDW280-11028 "A" 3-31-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED N/C LAST REV "A" LOFTED DWG WAS DIM. R.E. KINGSBURY 2-21-67						
B	1	1.00,1.10						EOB1	IN MOD/BLK LTA-1R WAS LTA-1	NOT REQD	NOT	REQD	R.E. KINGSBURY 2-21-67		
	2	1.00,1.10, 2.00,3.00						EOB2	DELETED -1,-13, MS20426AD3(4) & NAS686A08(2) FROM F/D & B/M. REVISED N/A OF-11: FOR LTA-8, LM-1 & -2 NOW LDW280-28083 WAS LDW280-28069; LTA-3 & LM-3 NOW LDW280-23083 WAS LDW280-23069; LM-4,-5 & -6 NOW LDW280-54083 WAS LDW280-23069 & FOR LTA-1 NOW LTM280-26652 CREATED -15	LTA-1,-3 & -8 LM-1 THRU LM-6		-1 -13			
	3	1.00,1.10, 2.00,3.00						EOB3	REFERENCE EO B2 CHANGED -11 TO READ -15. REIDENTIFIED -15 PART ON EO B2 TO -17 ADDED EO TO RECORD BLOCK FOR LTA-3		✓				
	4	1.00,1.10						LEO280-296	FOR -15 & -17 ADDED LM-7 THRU LM-15 EFF	LM-7 THRU LM-15	NOT	REQD			
	5	1.10,3.00						EO B5	ON -17 ADDED HOLE SIZES: (2) #16 (.176-.182) & (3) #40 (.097-.102) HOLES. ADDED FINISH #88	LTA-1,-3 & -8 LM-1 THRU LM-15	✓				
	6	1.10,3.00						EOB6	REVISED TRIM ON LDW280-11028-17 ADDED EO TO RECORD BLOCK FOR LTA-3, LTA-1						
	7							EOB7	CANCELLED BY EOB8	NOT REQD	NOT	REQD			
	8							EOB8	CANCELS EO B7						
	9							Ⓡ	(REF EO B2 & B6) EFF LTA-1 S/B LTA-1R PER EO B1						
C	1	1.00				✓		LEO280-682, LCD 1224 CCA 548	CANCELLED BY LEO280-682 (C5)	LTA-8, DVT(70)	NOT	REQ'D	R.J. PRIZZI 7-10-68	3C	
	2	1.00				✓		LEO280-606, LCD 1367 CCA 547	FOR -15 ADDED ZERO "G" EFF.	ZERO "G"					
	3	1.00				✓		LEO280-674 LCD 1367 CCA 547	FOR -17 ADDED ZERO "G" EFF.						
	4	1.00				✓		LEO280-675 LCD 1367 CCA 547	REF: NOTED CHANGE ON LEO606, N/A WAS 28083, S/B 54083.		✓				
	5	1.00				✓		LEO280-682 LCD 1224 CCA 548 Ⓒ	CANCELS LEO 280-604 (C1)	LTA-8, DVT(70)		✓			

FOR CONTINUATION OF REVISIONS SEE SHEET

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-11028	C
SCALE NONE		SHEET 1.10	

ENG 77.3 5-65

01

NAS 9-1100

LDW280-11029 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28274	LEM-3 (33)	1
		LEM-2 (32)	1
		LEM-1 (31)	1
LEM	LDW280-28274	LTA-8 (18)	1

PART NO. LDW280-11029-17, -13 & -15

GAEC SCH NO. 32-2

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -17

GRUMMAN REL INFO

PRIM NO. 215 E(001) MP 12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM

DOCUMENTATION TYPE II

DRAWN BY	E. ERICKSON 3-26-66	RELIABILITY	
LAYOUT BY	KORYKORA 2-17-66		
CHECKED BY			
GR. LEADER	3/26/66		
VEH DES INT	3/27		
STRUCTURE	BW 3/26	PROJ ENGR	3-29-66
STRUCTURE	HILDERMAN 3/26	REL GROUP	3-30-66
WEIGHTS	3-29		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE - MID SECT - +Y22 BEAM
PROPULSION VIBRATION AMPLIFIER

SIZE B CODE IDENT NO. 26512 LDW280-11029 A

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

0 1

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00,1.10, 2.00&3.00						E.O.A1	REMOVED -11 ADDED -17 (SAME AS -11 EXCEPT FOR IML BDN SHEET 1.00 OF 4 WAS 1.00 OF 3 ADDED SHEET 1.10	LEM-1,-2,-3 LTA-8		-11	FOSTER 48 6-8-66		
	2	1.10,2.00						E.O. A2	IN B/M (ON -13&-15) FIN#88 (WAS) NONE	LEM-1,-2,-3 LTA-8	✓		FOSTER 48 6-8-66		

CHG APPROVED

LTR	GROUP LDR	V.D.I.	STRUCT.	STRUCT.	WEIGHTS						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11029	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11029-15	E	ANGLE	AL ALLOY SH	QQ-A-250/5	ALCLAD 2024 T3	1 3/4 x 4 3/4 x .040	NONE	88	
		LDW280-11029-13	E	ANGLE	AL ALLOY SH	QQ-A-250/5	ALCLAD 2024 T3	2 x 4 7/8 x .040	NONE	88	
		LDW280-11029-17	E	BRACKET	AL ALLOY SH	QQ-A-250/12	ALCLAD 7075	3 1/4 x 5 5/8 x .032	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	G.S.S. 9030M

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

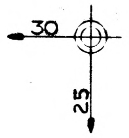
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

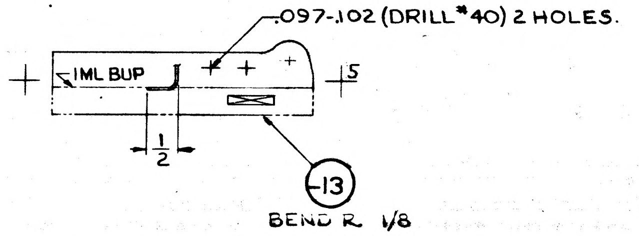
SIZE	CODE IDENT NO.		
B	26512	LDW280-11029	A
SCALE NONE		SHEET 2.00	

ENG 77.2 7-65

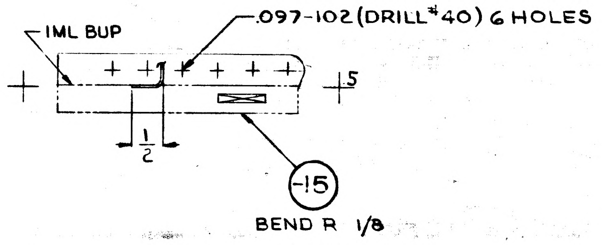
01

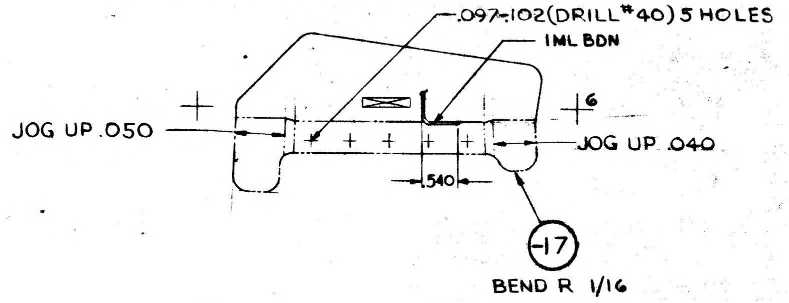
NAS 9-1100





NOTES:
1- NO TOOLING HOLES PERMITTED IN PARTS.





MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .000 .063R TO .250R ± .015 OVER .250R ± .000	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-11029 A

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
	SIZE F	CODE IDENT NO. 26512	LDW280-11029	R A
LEM MODEL OR END ITEM	SCALE FULL			SHEET 3.00

2 FOR PHOTO REPRODUCTION 1

NAS 9-1100

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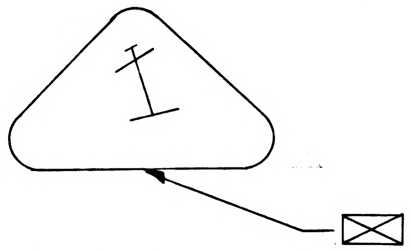
ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11030
EO NO. F5
CONTROL INFO NO. LDW280B-3487

ADD NOTE *

ON LM-7 & SUB, MARK PART NUMBER & GAEC SERIAL NUMBER APPROX. AS SHN IN ACCORDANCE WITH SPECIFICATIONS LSP-14-002, TYPE III, CLASS I. MARK 1/16 INCH HIGH LETTER WITH WHITE VELVET PAINT #401A10.



☒ (SEE NOTE *)

* USE NEXT AVAILABLE NO.

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	✓ LCD-2504 ① (5)

REASON FOR EO	DESCRIPTION OF EO	GAEC / EO RELEASE
PROVIDE IDENTICATION OF PARTS	ADDED NOTE *	JK 5/16/68

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-7 (37)	
		THRU	
		LM-15 (45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS										
✓		✓		APPROVED BY	JaP			FDR	BN		JaP	JM
				DATE	5/16/68			5/15/68	5-16		5/16/68	5-16-68
REVISE DWG	RECORD EO	REWORK	SCRAP		VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	PANEL A/S-CABIN WINDOW INNER	LDW280-11030	F5

ISSUED BY JOHN K. LEE SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

QTY PER ASSEMBLY -3	QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
			MS20470AD4	E	RIVET	STD PART						
1			LDW280-11034-13	E	COVER	AL ALLOY SH	QQ-A-250/4	2024	.050 x 6 3/8 x 7	T42	88	
	1		LDW280-11034-11	E	COVER	AL ALLOY SH	QQ-A-250/4	2024	.050 x 6 x 7	T42	88	
			LDW280-11034-3	E	COVER ASSY					NONE	NONE	
			LDW280-11034-1	E	COVER ASSY					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T42	AL HEAT TREAT	MIL-H-6088
88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11034	A

SCALE NONE SHEET 2.00

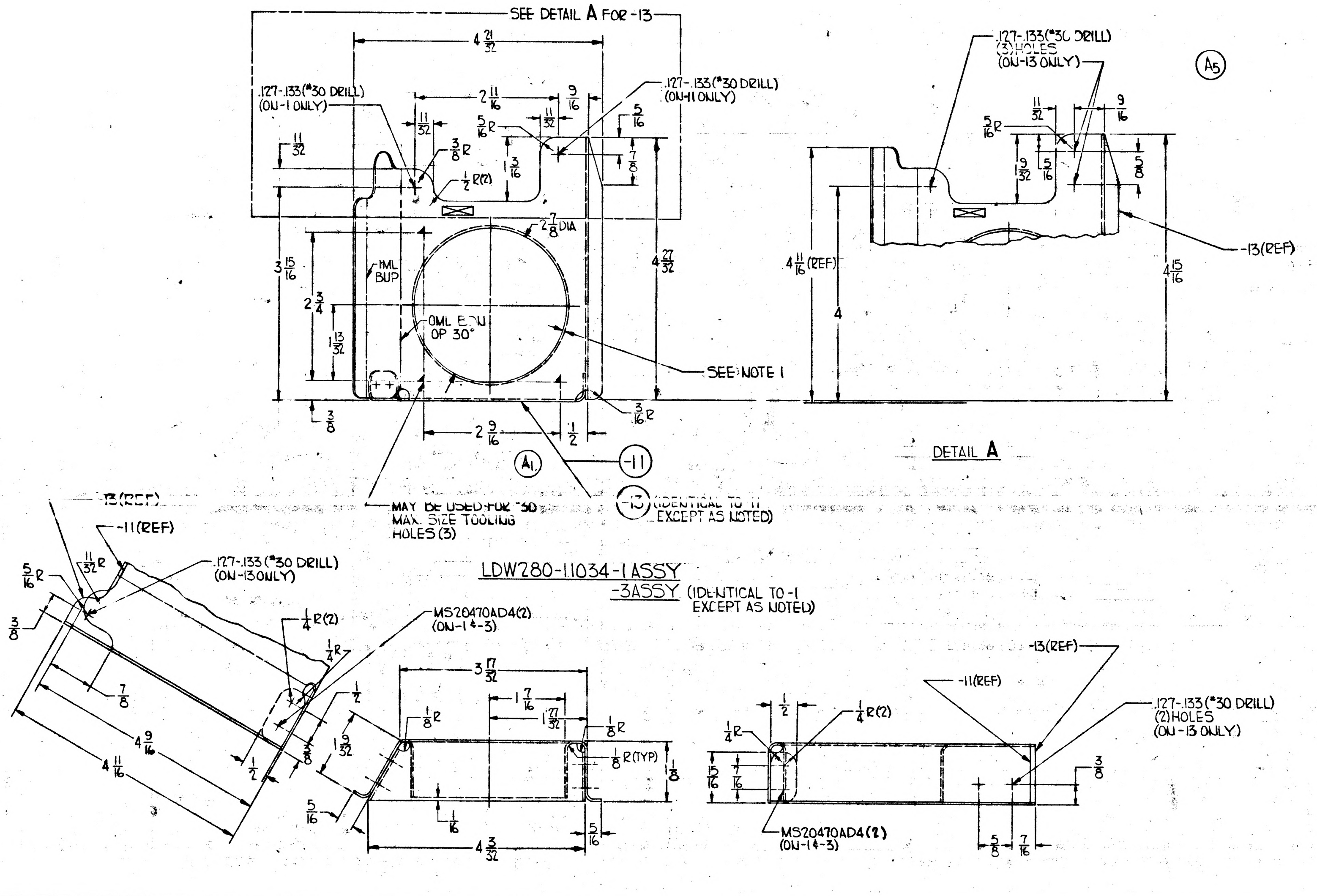
ENG 77.2 7-65

01

NAS 9-1100

LDW280-11034 A

NOTES:
1. MINIMUM PERMISSIBLE REMAINING THICKNESS TO BE .020 IN AREA SHOWN.



SEE DETAIL A FOR -13
.127-.133 (#30 DRILL) (ON -1 ONLY)
.127-.133 (#30 DRILL) (ON -11 ONLY)
IML BUP
OML EDU OP 30°
2 7/8 DIA
SEE NOTE 1
MAY BE USED FOR #30 MAX SIZE TOOLING HOLES (3)
A1
-11
-13 (IDENTICAL TO -11 EXCEPT AS NOTED)
.127-.133 (#30 DRILL) (3) HOLES (ON -13 ONLY)
A5
-13 (REF)
DETAIL A
-13 (REF)
-11 (REF)
.127-.133 (#30 DRILL) (ON -13 ONLY)
LDW280-11034-1 ASSY
-3 ASSY (IDENTICAL TO -1 EXCEPT AS NOTED)
MS20470AD4 (2) (ON -1 & -3)
-13 (REF)
-11 (REF)
.127-.133 (#30 DRILL) (2) HOLES (ON -13 ONLY)
MS20470AD4 (2) (ON -1 & -3)
1/8 R (TYP)

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.030	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE ~~MARKED~~ IS 1 1/2 FASTENER DIA FROM ℄ FASTENER	✓
SYMBOL ✓ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	✓
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-11034	A
	SCALE FULL		SHEET 3.00	

LDW280-11034 A

NAS 9-1100

LDW280-11034 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM		QUAL TEST(72)	1
LEM	LDW280-28099	LEM-2(32)	1
LEM	LDW280-28099	LEM-1(31)	1
LEM	LDW280-28099	LTA-8(18)	1
PART NO. LDW280-11034-1		GAEC SCH NO. 31-1	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-54099	TM-2A/R(60)	1
LEM	LDW280-54099	LEM-15(45)	1
LEM	LDW280-54099	LEM-14(44)	1
LEM	LDW280-54099	LEM-13(43)	1
LEM	LDW280-54099	LEM-12(42)	1
LEM	LDW280-54099	LEM-11(41)	1
LEM	LDW280-54099	LEM-10(40)	1
LEM	LDW280-54099	LEM-9(39)	1
LEM	LDW280-54099	LEM-8(38)	1
LEM	LDW280-54099	LEM-7(37)	1
LEM	LDW280-54099	LEM-6(36)	1
LEM	LDW280-54099	LEM-5(35)	1
LEM	LDW280-54099	LEM-4(34)	1
LEM	LDW280-23099	LEM-3(33)	1
LEM	LDW280-23099	LTA-3(13)	1
PART NO. LDW280-11034-3		GAEC SCH NO. 31-1	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	A	GRUMMAN REL^C INFO A/B		
		PRIM NO.	(001)	
LAST DASH NO. USED	-13	215	MP 10/1/66 B	BJ 1/6/6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.010 ±0°30'

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 LINE ITEM #1 DOCUMENTATION TYPE II

DRAWN BY	ROCKLEIN 3/25/66		
LAYOUT BY	ROCKLEIN 3/25/66		
CHECKED BY			
GR LEADER	R.V. PHILLIPS 3/25/66		
VEH. DES INT	W. BISCHOFF 3/25/66		
STRUCTURES	FEB BW 3/29/66	PROJ ENGR	J. ALBER RMC 3/31/66
STRUCTURES	HILDERMAN 3/29/66	REL GROUP	BOTTI 4/1/66
WEIGHTS	D. ROBESCH D.J. 3/31/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

COVER ASSEMBLY
ASCENT STAGE, MID SECT., TEMPERATURE CONTROL VALVE, HEAT EXCHANGER

SIZE	CODE IDENT NO.		
B	26512	LDW280-11034	B
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-11034 NO CHANGE 4/1/66

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE LAST REVISION NO CHANGE SH 1 OF 4 WAS 1 OF 1.	NOT REQD	NOT	REQD	JAEGGI 6-5-66		
A	1	1.10 & 3.00						EO A1	ADDED CALLOUT ".127-.133 HOLE(3)... TO -11. ADDED DIMENSIONS TO LOCATE HOLES. ADDED NOTE "MINIMUM PERMISSIBLE REMAINING THICKNESS TO BE .020 IN AREA SHOWN.	LEM-2 LEM-1 LTA-8	✓				
	2	1.10 & 3.00						EO A2	IN B/M FOR -11 STOCK SIZE .050 X 6 X 7 WAS .040 X 6 X 7						
	3							EO A3	-1 ASSY, IN F/D, TOP VIEW, .190-.196 HOLE WAS .165-.171 HOLE; VIEW LOOKING OUTBOARD ADDED SHIM AS REQD (.090 MAX.) ADDED NOTE *.						
	4								REF E.O. A3 NOT APPLICABLE.	NOT REQD	NOT	REQD			
	5	1.00, 1.10, 2.00, 3.00						Ⓡ	ADDED -13 AND -3 ASSY.	LTA-3 LEM-3-4-5-6					
B	1	1.00, 1.10						LEO280-191	FOR-3 ADDED TM-2 A/R EFFECTIVITY (NEXT ASSY LTM280-25106) ADDED LEM-7 THRU LEM-15 EFFECTIVITY (NEXT ASSY LDW280-54099.	TM-2A/R, LEM-7 THRU LEM-15.	NOT	REQ'D	BRODA 8-23-66 WW		
	2	1.00, 1.10						EO B2	ADDED QUAL. TEST (72) REQUIREMENT TO -1	QUAL TEST	NOT	REQD	RC MILLER 8-31-66		
	3	1.00, 1.10						②	IN-3 MOD BLOCK NEXT ASSY FOR TM-2A/R(60), LDW280-54099 WAS LTM280-25106	TM-2A/R	NOT	REQD			

FOR CONTINUATION OF REVISIONS SEE SHEET ________

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-11034	B
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11034		EO NO. B2
CONTROL INFO NO. LDW280-9652		

ADD EFF. AS SHOWN TO -1
REF: LAV330-352, 25 JULY 1966

LEM	—	QUAL TEST (72)	1
MODEL	NEXT ASSEM	MODULE NO.	REQ'D PER MODULE
PART NO. LDW280-11034-1			

3

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐

REASON FOR EO: ADD TEST PART REQUIREMENT
REF

DESCRIPTION OF EO: ADDED QUAL. TEST (72) REQUIREMENT TO -1

GAEC C EO RELEASE: 8-25

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		QUAL TEST (72)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: NOT REQ'D (REWORK | SCRAP)

APPROVED BY				—				RMC	
DATE	8/17/66	8-9		—	8/18			8-24-66	8-22-66
	VDI	~~SUPPORT~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG		GOVT

PRIORITY: C
DRAWING TITLE: COVER ASSEM. ASCENT STAGE-MID SEC-TEMPERATURE CONTROL VALVE-HEAT EXCHANGER
DRAWING NO.: LDW280-11034
EO NO.: B2

ISSUED BY J J FISCH SECTION VDI GROUP NO. 335 PL 35

01

NAS 9-1100

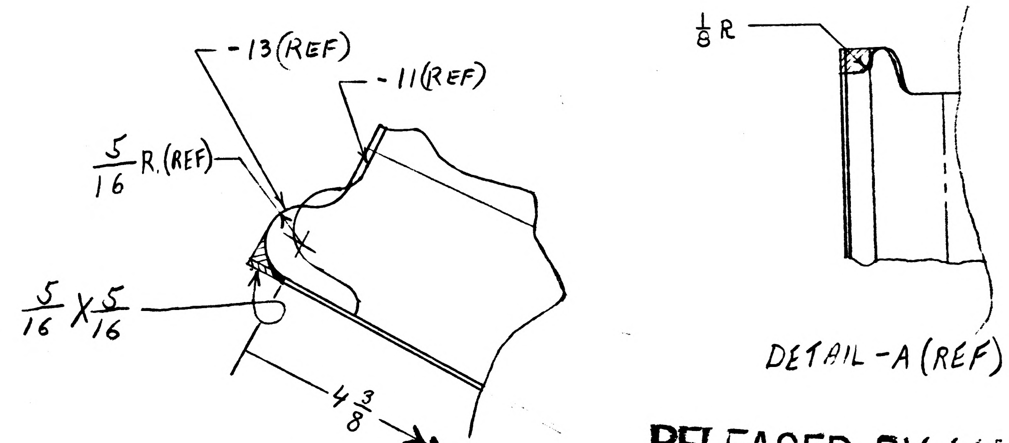
ENG 32.1 REV 3-65

B

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER *

DWG. NO. LDW 280-11034
EO NO. C1
CONTROL INFO NO. LM 5- 15873

IN FLD & B/M TRIM-13 AS SHOWN:



RELEASED BY LIAISON

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐

REASON FOR EO: TRIM PART FOR CLEARANCE

DESCRIPTION OF EO: IN FLD TRIMMED -13.

GAEC EO RELEASE: JK

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3 (33)	
		THRU	
		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK ✓ SCRAP

APPROVED BY	JaP			—	JFJ	CR	WRB	JBP
DATE	8/14/67			—	8-9-67	8-8-67	8/14/67	8/10/67
8/7/67	VOI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~[illegible]~~

PRIORITY: C

DRAWING TITLE: COVER ASSY. A/S M/S TEMP. CONTROL VALVE HEAT EXCHGR

DRAWING NO. LDW 280-11034

EO NO. C1

ISSUED BY LIAISON P.H / S. GUREVICH x86757 SECTION VOI/Phillips GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11035

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23320	LTA-1(11)	4
LEM	LDW280-23320	LEM-6(36)	4
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(32)	
		LEM-1(31)	
		LTA-8(18)	
LEM	LDW280-23320	LTA-3(13)	4

PART NO. LDW280-11035-11

GAEC SCH NO. 31-Z

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED —

LAST DASH NO. USED -11

GRUMMAN REL INFO

PRIM NO.	VE(001)		
215	WP12		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ± 1/32 ±.010 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM #1

DOCUMENTATION TYPE II

DRAWN BY	F. CURASI 3-26-66	RELIABILITY	
LAYOUT BY	——		
CHECKED BY			
GR. LDR.	J. Pucatini 3/26		
VEH. DES INT.	3/28		
STRUCT.	3/29	PROJ ENGR	3-30-66
STRUCT.	HILOGMAN 3/29	REL GROUP	Botti 4-2-66
WEIGHTS	A Rabiol 3-35		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

PLATE
ASCENT CABIN SEPARATION
TRANSDUCER

SIZE B

CODE IDENT NO. 26512

LDW280-11035

SCALE NONE

SHEET 1.00 OF 3.00

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11035-11	E	PLATE	AL. ALLOY	QQ-A-355	2024-T3	.063 x 1 1/2 x 1 3/4	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP 14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B

CODE IDENT NO. 26512

LDW 280-11035

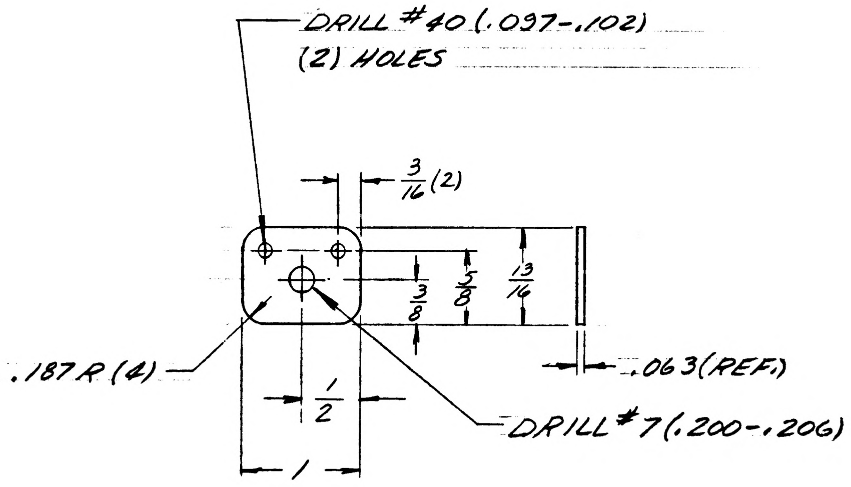
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


DRILL #40 (.097-.102)
(2) HOLES
$\frac{3}{16}$ (2)
$\frac{3}{8}$
$\frac{5}{8}$
$\frac{13}{16}$
.187 R (4)
.063 (REF.)
$\frac{1}{2}$
1
DRILL #7 (.200-.206)

LDW280-11035-11

TO BE REDRAWN ON PRODUCTION FORMAT

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11035
SCALE FULL		SHEET 3.00

ENG 73.1 6-64

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO LDW280-11035
EO NO. A1
CONTROL INFO NO. LEM-3-2832.

IN M/B FOR-11
8 REQ'D PER MOD. WAS 4

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		3

REASON FOR EO: QUANTITY PER MOD ON DET CONFLICTS WITH N/A LDW280-23320

DESCRIPTION OF EO: IN M/B FOR-11 8 REQ'D PER MOD WAS 4

GAEC EO RELEASE: LE

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM	LTA-1(11)	-3(13)-8(18)	
	LEM-1(31)	-2(32)-3(33)-4(34) -5(35)-6(36)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK SCRAP — NOT REQ'D

APPROVED BY								
DATE	5/2/66	5-3		—	—	4-20-66	5-3	4-22-66
	VDI	~~SUPPORT~~ WTS	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY C3

DRAWING TITLE PLATE ASCENT CABIN SEPARATION TRANSDUCER

DRAWING NO. LDW280-11035

EO NO. A1

ISSUED BY S.J. TARTAMELLA 4-20-66 (X2151) SECTION VDI PUSATERI GROUP NO. 335 PL 35

01

NAS 9-1100

24 *

ENG 30.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280
EO NO. 296
CONTROL INFO NO. LDW280 A 0658

*

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

	DRAWING NUMBER	CHANGE NUMBER	TITLE
✓	LDW280-10981	A1	SEE DRAWING
	↑		↑
✓	-11015	B1	
✓	-11025	B1	
✓	-11028	B4	
✓	-11035	A2	
✓	-11036	B1	
✓	-11039	A1	
✓	-11045	A1	
✓	-11048	B1	
✓	-11050	C1	
✓	P11055	B2	
✓	P11056	C2	
✓	-11067	B1	
✓	-11068	B1	
✓	H11069	B1	
✓	-11070	C1	
✓	-11071	A1	
✓	-11072	A1	
✓	-11073	A2	
✓	P11087	B1	
✓	-11103	A1	
✓	-11116	A1	
✓	-11119	B1	
✓	-11123	A2	
	-11128	C1	
✓	-11142	A1	
✓	-11153	A1	
✓	-11154	A2	
	-11155	A1	
	-11156	B1	
	↓ -11157	B2	↓
	LDW280-11160	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC C EO RELEASE: E 10-6

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM 9(39)
LEM		LEM-10(40) LEM-11(41)	LEM-12(42)
LEM		LEM-13(43) LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG	RECORD EO	REWORK	SCRAP
✓		NOT REQ'D	

APPROVED BY: DP
DATE: 9/23/66

V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
			—	9.29		RMC 10-6-66	AC 10-3-66

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LE0280
EO NO.: 296

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 35

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER *

DWG. NO. LEO 280
EO NO. 596
CONTROL INFO NO. LDW280A-6665

IN M|B FOR *, ADD OR REMOVE ** EFF.

DWG NR	DASH Nº *	# REQ'D	N/A	REMOVE EFF **	ADD	DISPOSITION OF PARTS *	CHANGE NO
LDW280-11642 ✓	-13	1	LDW280-53161	PA-1(47)		SCRAP	A4
LDW280-11643 ✓	-3	1	LDW280-53161	PA-1(47)		SCRAP	A8
LDW280-11045 ✓	-11,-12	1 EA	LDW280-23320	LTA-3(13)		SCRAP	A2
LDW280-11035 ✓	-11	8	LDW280-23320	LTA-3(13)		SCRAP	A3
LDW280-11333	-11,-13	1EA	LDW280-54113		LM-12(42) TO LM-15(45)	NOT REQD	A3
LDW280-11334	-13,-15,-17	3EA	LDW280-54113		LM-12(42) TO LM-15(45)	NOT REQD	A2
LDW280-11335	-11,-13,-15 -16,-16,-17	1EA	LDW280-54113		LM-12(42) TO LM-15(4	NOT REQD	A1

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐ 3

REASON FOR EO: UPDATE DWG REQ'TS

DESCRIPTION OF EO: FOR *, ADDED OR REMOVED **

Ⓡ GAEC EO RELEASE C
JL 5-15-67

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOTED	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: NOTED * (REWORK / SCRAP)
APPROVED BY / DATE 5/3/67 — 6 — VDI
SUPPORT — RELIAB. GROUP
GROUP LEADER: F.A.R. 5/3/67
STRESS GROUP: 5/4/67
LIAISON ENGRG
PROJ ENGRG: DAM 5-9-67
~~GOVT~~: Bott 5-15-67

PRIORITY: C
DRAWING TITLE: NOTED ABOVE
DRAWING NO.: LEO 280
EO NO.: 596

ISSUED BY M. SHAPIRO X1392 SECTION VDI GROUP NO. 335 PL 25

01 NAS 9-1100

LDW280-11036 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280H23060	LEM-6(36)	2EA.
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
		LEM-2(2)	
		LEM-1(31)	
		LTA-8(18)	
LEM	LDW280H23060	LTA-3(13)	2 EA

PART NO. LDW280-11036-15,&-17

GAEC SCH NO. 31-2

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -17

GRUMMAN REL INFO

PRIM NO. 215 45(001) MP17 RS 4/4

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ±1/16 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II.

DRAWN BY A.STERNBERG 3-28-66

RELIABILITY

LAYOUT BY BONELLI

CHECKED BY 3-29-66

GR LEADER J. Pisateri 3/29

VEH-DES INT 3/29

STRUCTURES 3/29

STRUCTURES HILDERMAN 3/29

WEIGHT

PROJ ENGR 4-5-66

REL GROUP 4-6-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BUMPER
ASCENT STAGE-CABIN FLOOR
X215.0

SIZE B

CODE IDENT NO. 26512

LDW280-11036 A

SCALE NONE

SHEET 1.00 OF 4

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1,2,3 1.10					✓	EO A1	CREATED -15 & -17, REPLACED -11 & -13 RESPECTIVELY SH 1 OF 4 WAS SH 1 OF 3. ADDED SH 1.10	LTA-3(13) LTA-8(18) LEM-1(31) THRU LEM-6(36)		-11 & -13	P. CARTSELOS 6-7-66		

CHG APPROVED

LTR	GROUP LDR	VEH-DES INT	STRUCTURES	STRUCTURES	WEIGHT
A					

ENG 77.16 3-66

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW 280-11036	A
SCALE NONE			SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
							05262	LDW280-11036-17	E	BUMPER	DISOGRIN			.031×1¾×14½	NONE	NONE	
							05262	LDW280-11036-15	E	BUMPER	IDSA 9550			.031×1¾×14½	NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

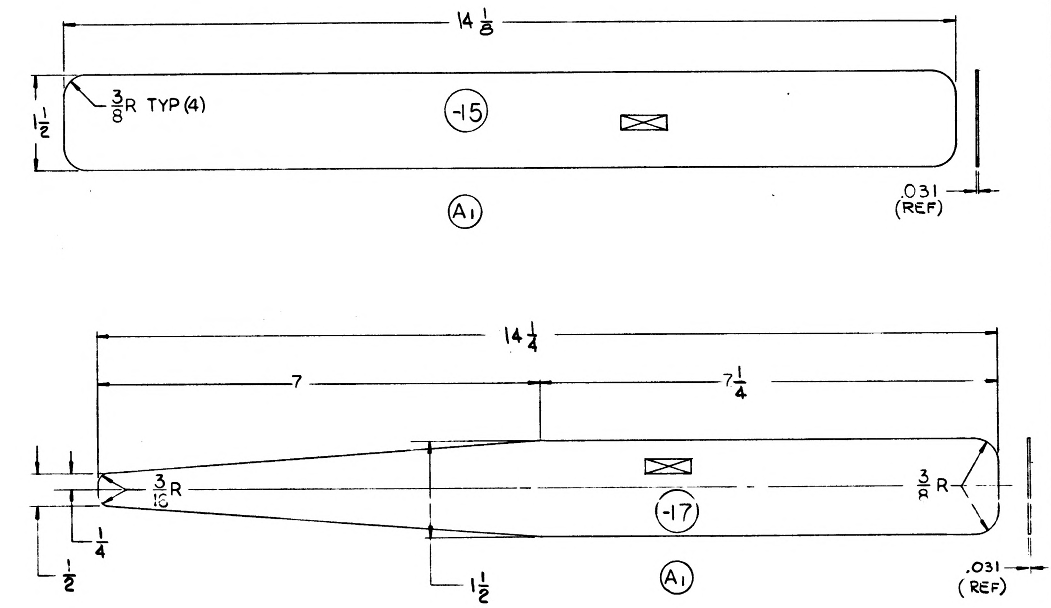
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11036	A
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY. ✓

FILLET AND INSIDE CORNER RADII TOLERANCES
.016R TO .062R ± .010
.063R TO .250R ± .015
OVER .250R ± .030

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.

MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES

125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10

200 FOR ALL DRILLED HOLES

REMOVE ALL BURRS. BREAK ALL EDGES .015-.031

INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS

SYMBOL √ DENOTES SURFACE TO BE MACHINED

UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.

TOLERANCE ON LOFTED DELINEATIONS IS

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	C	26512	LDW280-11036	A
SCALE FULL			SHEET 3.00	

LDW280-11036A

LDW280-11036A

01

NAS 9-1100

24 *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE023C
EO NO. 296
CONTROL INFO NO. LDW28C A 0658

*TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
✓ LDW280-10981	A1	SEE DRAWING
✓ -11015	B1	
✓ -11025	B1	
✓ -11028	B4	
✓ -11035	A2	
✓ -11036	B1	
✓ -11039	A1	
✓ -11045	A1	
✓ -11048	B1	
✓ -11050	C1	
✓ P11055	B2	
✓ P11056	C2	
✓ -11067	B1	
✓ -11068	B1	
✓ H11069	B1	
✓ -11070	C1	
✓ -11071	A1	
✓ -11072	A1	
✓ -11073	A2	
✓ P11087	B1	
✓ -11103	A1	
✓ -11116	A1	
✓ -11119	B1	
✓ -11123	A2	
-11128	C1	
✓ -11149	A1	
✓ -11153	A1	
-11154	A2	
-11155	A1	
-11156	B1	
-11157	B2	
LDW280-11160	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC C EO RELEASE: 10-8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM 9(39)
LEM		LEM-10(40) LEM-11(41)	LEM-12(42)
LEM		LEM-13(43) LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D REWORK SCRAP

	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY	RP			—	hr		RMC	AC
DATE	9/23/66			—	9.29		10-6-66	10-3-66

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LE0280
EO NO.: 296

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL. 35

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 856
CONTROL INFO NO. LDW280B1474

IN MOD. BLOCK OF THE FOLLOWING:

REVISE DRAWINGS LISTED BELOW FOR DASH NUMBERS EFFECTIVE ON LEM-4 (34) THRU LEM-15 (45) TO READ N/A LDW 280 H 54060 (WAS LDW 280 H 23060)

DRAWING NUMBER	DASH NO *	CHANGE NUMBER	TITLE
✓ LDW 280 -10817	-11, -13	A2	CHANNELS, A/S, CABIN FLOOR x 215
✓ LDW 280 -11036	-15, -17	B2	BUMPER, A/S, CABIN FLOOR x 215
✓ LDW 280 -11687	-1	A2	SUPPORT ASSY, A/S, CABIN FLOOR, TRANSD.
✓ LDW 280 H 23232	-1, -3	B3	BEARING ASSY, A/S, CABIN FLOOR x 215
✓ LDW 280 H 23233	-1, -3	B4	BEARING HOUSING ASSY, A/S, CAB. FLOOR
✓ LDW 280 H 23236	-1, -3	B4	HANDGRIP ASSY, A/S, CABIN FLOOR x 215
✓ LDW 280M 10716	-1	A2	BEARING, A/S, CABIN -FLOOR
✓ LDW 280M 10719	-3	B4	TRUSS, A/S, CABIN FLOOR

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☑ (LCD 2147 CCA 668 ; LCD 2011) (5)

REASON FOR EO: TO UPDATE NEXT ASSEMBLY REQUIREMENTS. (CDR LIST)

DESCRIPTION OF EO: FOR DASH NUMBERS *, N/A LDW 280 H 54060 WAS LDW 280 H 23060

(R) GAEC EO RELEASE: C JK 2/6/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM 4 (34)	
		THRU	
		LM 15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONT~~
APPROVED BY				FHR	BW			
DATE	1/24/68			1-24-68	1-24		1/24/68	[illegible]/68

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO.: LEO 280

EO NO.: 856

ISSUED BY TRAUGOTT x 1153 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280
EO NO. 1475
CONTROL INFO NO. LDW280B8049

IN MOD BLOCK
REMOVE LM-15(45) EFF FROM FOLLOWING PARTS:

DWG NO.	DASH NO.	TITLE	NEXT ASSY	QUANT. REQD	COMAT	CHANGE EO. №
✓ LDW280M10714	-5	HOUSING-BEARING	LDW280H23232	1	M	B4
✓ LDW280M10715	-1	HOUSING-BEARING	LDW280H23233	1	M	A4
✓ LDW280M10716	-1	BEARING	LDW280H54060	1	M	A3
✓ LDW280M10717	-3	PIN	LDW280H54060	1	M	A3
✓ LDW280M10719	-3	TRUSS	LDW280H54060	1	M	B5
✓ LDW280M10722	-1 & -2	CHANNEL	LDW280H23235	1 EA	M	C1
✓ LDW280M10723	-1	FITTING	LDW280H23234	2	M	C1
✓ LDW280M10724	-3	FITTING	LDW280H23234	1	M	C1
✓ LDW280M10825	-1	CHANNEL	LDW280H23273	1	M	C5
✓ LDW280P10966	-13	CHANNEL	LDW280H23334	1	NM	B1
✓ LDW280-10620	-11-1	WEB	LDW280H54060	1	M	B6
✓ LDW280-10621	-17	WEB	LDW280H54060	1	M	B7
✓ LDW280-10788	-11 & -13 -15	WEB	LDW280H23234 LDW280H23236	1 EA 1	M	C1
✓ LDW280-10816	-11 -13 & -15	CHANNEL	LDW280H23236	1 2 EA	M	B3
✓ LDW280-10817	-11 & -13	CHANNEL	LDW280H54060	2 EA	M	B1
✓ LDW280-10927	-11 & -19 -13, -15 & -17	SKIN	LDW280H23235	2 EA 1 EA	M	C1
✓ LDW280-10955	-11 -13-1	PLATE	LDW280H23234 LDW280H54060	1 1	M	B1
✓ LDW280-10979	-11	DOUBLER	LDW280H54060	1	M	B1
✓ LDW280-11036	-15 & -17	BUMPER	LDW280H54060	2 EA	M	B3

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	✓	LCD3587 PKG12 CCA1821 AMD#1	(5)

REASON FOR EO: PARTS NOT REQD FOR MP

DESCRIPTION OF EO: (NOTED ABOVE)

GAEC EO RELEASE: 7-9-69; JK 7/10/69

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15(45)	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO

DISPOSITION OF PARTS: REWORK; ✓ SCRAP

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY				FDR/W	CW		Gal	Bott
DATE	7/2/69	7/3/69		7-2-69	7-8-69		7/8/69	7-10-69

PRIORITY: C

DRAWING TITLE: (NOTED ABOVE)

DRAWING NO.: LEO280-

EO NO.: 1475

7-25-69
ISSUED BY P MARTELLO X86048 SECTION VEH DES INT GROUP NO. 335 PL 25

LDW280-11037 A

LEM	LDW280-28275	LEM-15(45)	1EA
		LEM-14(44)	1EA
		LEM-13(43)	1EA
		LEM-12(42)	1EA
		LEM-11(41)	1EA
		LEM-10(40)	1EA
		LEM-9(39)	1EA
		LEM-8(38)	1EA
		LEM-7(37)	1EA
		LEM-6(36)	1EA
		LEM-5(35)	1EA
		LEM-4(34)	1EA
		LEM-3(33)	1EA
		LEM-2(32)	1EA
LEM	LDW280-28275	LEM-1(31)	1EA
LEM	LDW280-28275	LTA-8(18)	1EA
LEM	LDW280-28275	LTA-3(13)	1EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-11037-13 & -15		GAEC SCH NO. 31-2	

LEM	LDW280-28275	LEM-2(32)	1
LEM	LDW280-28275	LEM-1(31)	1
LEM	LDW280-28275	LTA-8(18)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-11037-17		GAEC SCH NO. 31-2	

LEM	LDW280-23275	LEM-15(45)	1
		LEM-14(44)	1
		LEM-13(43)	1
		LEM-12(42)	1
		LEM-11(41)	1
		LEM-10(40)	1
		LEM-9(39)	1
		LEM-8(38)	1
		LEM-7(37)	1
LEM	LDW280-23275	LEM-6(36)	1
		LEM-5(35)	1
		LEM-4(34)	1
		LEM-3(33)	1
LEM	LDW280-23275	LTA-3(13)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-11037-11		GAEC SCH NO. 31-2	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	—	GRUMMAN REL INFO		
LAST DASH NO. USED	-17	PRIM NO.	LE(001)	
		215	MP-A	8-26-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM I | DOCUMENTATION TYPE II

DRAWN BY	J.J. LEONARD 3/22/66		
LAYOUT BY	MAILA		
CHECKED BY			
GROUP LDR	PHILLIPS 3/25/66		
VEH DES & INT	W BISCHOFF 3/26		
STRUCT	FEB BW 3/28	PROJ ENGR	J.ALBER/RC 4/4
STRUCT	HILDERMAN 3/28	REL GROUP	A.CARAMANICA 4/6/66
WEIGHTS	D.ROBESCH DJL 4/4		

Ⓡ GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TUBES
ASCENT STAGE~MID SECT-AFT VHF ANTENNA
SUPPORT

SIZE B | CODE IDENT NO. 26512 | LDW280-11037 | A
SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

DWG SUPERSEDES LDW280-11037 NO CHG 7/27/66

01 NAS 9-1100

LDW280-11037 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28275	LEM-15(45)	1 EA
		LEM-14(44)	1EA
		LEM-13(43)	1EA
		LEM-12(42)	1EA
		LEM-11(41)	1EA
		LEM-10(40)	1EA
		LEM-9(39)	1EA
		LEM-8(38)	1EA
		LEM-7(37)	1EA
		LEM-6(36)	1EA
		LEM-5(35)	1EA
		LEM-4(34)	1EA
		LEM-3(33)	1EA
		LEM-2(32)	1EA
LEM	LDW280-28275	LEM-1(31)	1EA
LEM	LDW280-28275	LTA-8(18)	1EA
LEM	LDW280-28275	LTA-3(13)	1EA
PART NO. LDW280-11037 -13 & -15		GAEC SCH NO. 31-2	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28275	LEM-2(32)	1
LEM	LDW280-28275	LEM-1(31)	1
LEM	LDW280-28275	LTA-8(18)	1
PART NO. LDW280-11037-17		GAEC SCH NO. 31-2	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23275	LEM-15(45)	1
		LEM-14(44)	1
		LEM-13(43)	1
		LEM-12(42)	1
		LEM-11(41)	1
		LEM-10(40)	1
		LEM-9(39)	1
		LEM-8(38)	1
		LEM-7(37)	1
LEM	LDW280-23275	LEM-6(36)	1
		LEM-5(35)	1
		LEM-4(34)	1
		LEM-3(33)	1
LEM	LDW280-23275	LTA-3(13)	1
PART NO. LDW280-11037-11		GAEC SCH NO. 31-2	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED —
LAST DASH NO. USED -17

GRUMMAN REL^c INFO A

PRIM NO.	LE(001)		
215	MP-A	8-26-6	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM I
DOCUMENTATION TYPE II

DRAWN BY	J.J. LEONARD 3/22/66		
LAYOUT BY	MAILA		
CHECKED BY ACA			
GROUP LDR	PHILLIPS 3/25/66		
VEH DES & INT	W BISCHOFF 3/26		
STRUCT	FEB BW 3/28	PROJ ENGR	J. ALBER/RC 4/4
STRUCT	HILDERMAN 3/28	REL GROUP	A. CARAMANICA 4/6/66
WEIGHTS	D. ROBESCH DJL 4/4		

Ⓡ GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TUBES
ASCENT STAGE~MID SECT-AFT VHF ANTENNA SUPPORT

SIZE B
CODE IDENT NO. 26512
LDW280-11037 A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

DWG SUPERSEDES LDW280-11037 NO CHG 7/27/66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET________

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED NO CHANGE LAST REV NO CHANGE SH 1.00 OF 4 WAS SH 1 OF 1				COLLET 7/27/66		
A	1	1.00 & 1.10						E.O. A1	REVISED N/A OF -11 TO LDW 280-23275 WAS LDW280-28275 REVISED N/A OF -17 TO LDW 280-28275 WAS LDW280-23275	NOTED	NOT REQD		COLLET 7/27/66		
	2	2.00							REVISED STOCK SIZE LENGTHS -11 WAS 17¼, -13 WAS 15⅞, -15 WAS 16½ & -17 WAS 16.	NOT REQD	NOT	REQD	MULLEN 7-29-66		
	3	1.00 & 1.10						Ⓡ	TO -11, -13 & -15 ADDED LEM-7 THRU LEM-15 EFF.	NOTED	NOT REQD		GUERCIA 8-4-66		

CHG APPROVED												
LTR	GROUP LDR											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11037	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
									RETRACED NO CHANGE LAST REV NO CHANGE SH 1.00 OF 4 WAS SH 1 OF 1				Collett 7/27/66		
A	1	1.00 & 1.10						E.O. A1	REVISED N/A OF -11 TO LDW 280-23275 WAS LDW280-28275 REVISED N/A OF -17 TO LDW 280-28275 WAS LDW280-23275	NOTED	NOT REQD		Collett 7/27/66		
	2	2.00							REVISED STOCK SIZE LENGTHS -11 WAS 17¼, -13 WAS 15⅞, -15 WAS 16½ & -17 WAS 16.	NOT REQD	NOT	REQD	MULLEN 7-29-66		
	3	1.00 & 1.10						Ⓡ	TO -11, -13 & -15 ADDED LEM-7 THRU LEM-15 EFF.	NOTED	NOT REQD		GUERCIA 8-4-66		8-6-66

CHG APPROVED	LTR	GROUP LDR										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11037	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11037-17	E	TUBE	AL ALY TUBING	WW-T-700/3	2024-T3	1¼ O.D.×049×18⅞	CM	76	7B
		↑ -15	E	↑	↑	↑	↑	1¼ O.D.×.049×19⅜	↑	↑	7F
		↓ -13	E	↓	↓	↓	↓	1 O.D.×.049×18¾	↓	↓	6D
		LDW280-11037-11	E	TUBE	AL ALY TUBING	WW-T-700/3	2024-T3	1¼ O.D.×.049×19⅜	CM	76	7B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
FP	PENETRANT							
	INSPECTION	MIL-I-6866						
CM	CHEM MILL							
	AL ALY	LSP14-26100						
76	ALODINE	LSP14-9010						

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11037	A
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01 NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11037-17	E	TUBE	AL ALY TUBING	WW-T-700/3	2024-T3	1¼ O.D.×049×18⅞	CM	76	7B
								-15	E	↕	↕	↕	↕	1¼ O.D.×.049×19⅜	↕	↕	7F
								-13	E	↕	↕	↕	↕	1 O.D.×.049×18¾	↕	↕	6D
								LDW280-11037-11	E	TUBE	AL ALY TUBING	WW-T-700/3	2024-T3	1¼ O.D.×.049×19⅜	CM	76	7B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
FP	PENETRANT							
	INSPECTION	MIL-I-6866						
CM	CHEM MILL							
	AL ALY	LSP14-26100						
76	ALODINE	LSP14-9010						

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

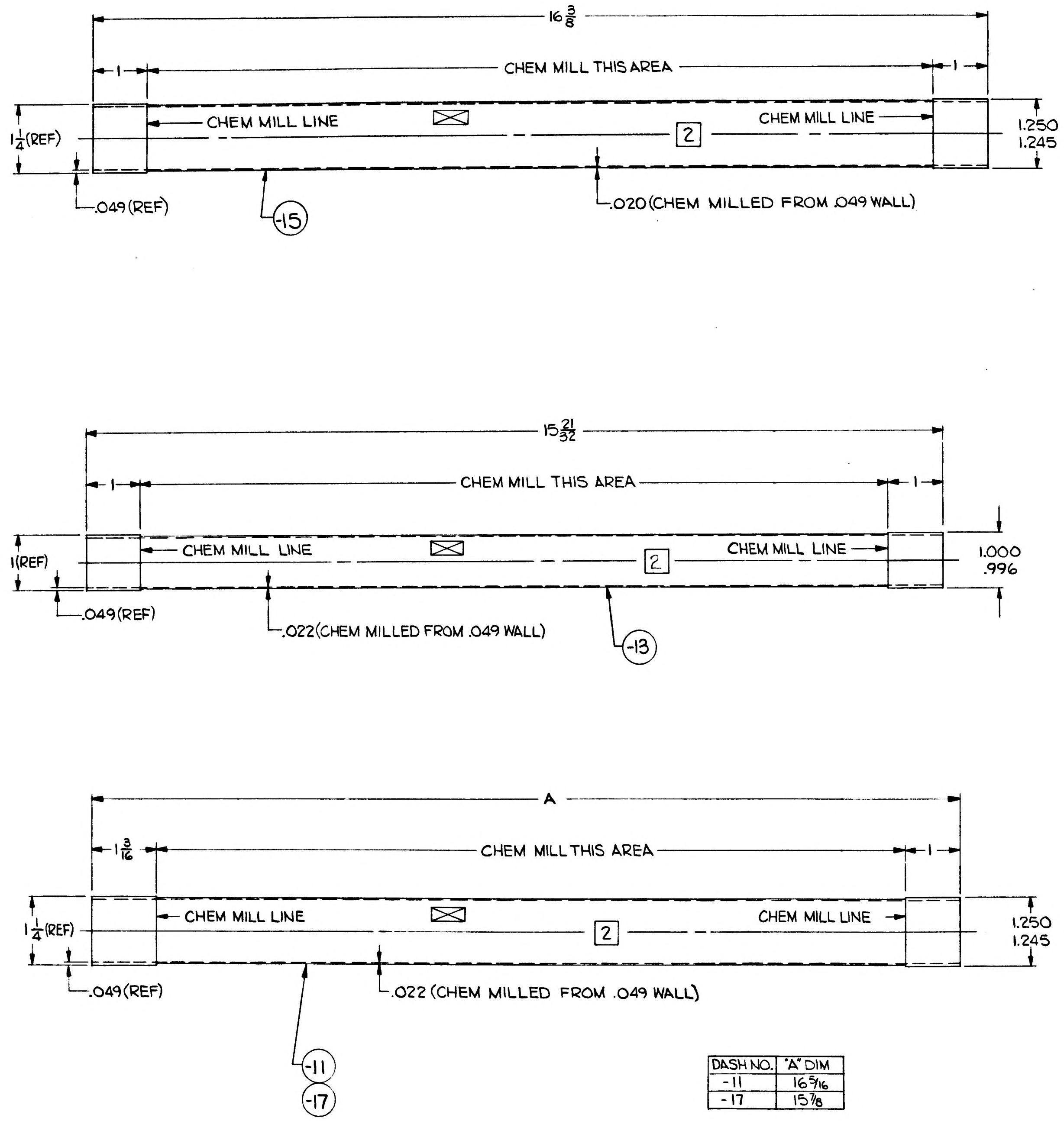
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11037	A
SCALE NONE		SHEET 2.00	

ENG 77.2 7-65

01

NAS 9-1100


16 3/8
CHEM MILL THIS AREA
1
1
CHEM MILL LINE
CHEM MILL LINE
2
1 1/4 (REF)
1.250
1.245
.049 (REF)
-15
.020 (CHEM MILLED FROM .049 WALL)
15 21/32
CHEM MILL THIS AREA
1
1
CHEM MILL LINE
CHEM MILL LINE
2
1 (REF)
1.000
.996
.049 (REF)
.022 (CHEM MILLED FROM .049 WALL)
-13
A
1 3/16
CHEM MILL THIS AREA
1
CHEM MILL LINE
CHEM MILL LINE
2
1 1/4 (REF)
1.250
1.245
.049 (REF)
.022 (CHEM MILLED FROM .049 WALL)
-11
-17

DASH NO.	"A" DIM
-11	16 5/16
-17	15 7/8

LDW280-11037 -15

CHEM-MILL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	.020 ± .002	.029 (REF)

LDW280-11037-11, -13 & -17

CHEM-MILL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
2	.022 ± .002	.027 (REF)

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	✓
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	✓
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	✓
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INC ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	F	26512	LDW280-11037	A

SCALE FULL

SHEET 3.00

LDW280-11037

LDW280-11037

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280 | EO NO. 285
CONTROL INFO NO. LDW280-A0816

DRAWING No	* DASH NO.	CHG LTR	DRAWING TITLE
LDW280-23258	-1	A2	SEE DWG
-23275	-1	B3	
-28275	-3	C4	
-28275	-5		
M10926	-1	A3	
M10926	-3		
M10781	-1	B2	
-11037	-11	B2	
-11037	-13		
-11037	-15		
P10809	-1	B1	
P10809	-3		
P10809	-5		
M10780	-3	B2	
M10780	-1		
M10782	-1	B3	
M10782	-5		
M10782	-7		

FOR THE PRECEDING PARTS ADD THE FOLLOWING INFORMATION TO THE EFFECTIVITY

LEM		QUAL TEST RIG (70)	1
MODEL	NEXT ASSEMBLY	MODULE No.	REQD PER MODULE

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: TO ADD EFFECTIVITY FOR QUAL TEST

DESCRIPTION OF EO: FOC * ADDED EFFECTIVITY FOR VENDOR QUAL TEST (70)

Ⓚ GAEC EO RELEASE: UE 10/4

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		QUAL TEST (70)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: NOT REQD (REWORK / SCRAP)

	COMM S/S	~~SUPPORT~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~SUPP~~
APPROVED BY								
DATE	9/29/66	10/3			9-29		10-3-66	9/29/66

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LEO 280
EO NO.: 285

ISSUED BY S GREENE x1814 9-29-66 SECTION COMM GROUP NO. 380 PL 35

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LE0280 | EO NO. 1479

CONTROL INFO NO. LDW280B8171

FOR THE FOLLOWING DWG REMOVE LM-15(45) REQMTS.

DWG №	DASH №	TITLE	NEXT ASSY	QUANT REQD	EO CHANGE №
LDW280-28275	-3 & -5	TUBE ASSY	LDW280-23258	1 EA	C6
LDW280M10768	-1-1	FITTING	LDW280-23304	1	A5
LDW280-11037	-11 -13 & -15	TUBE	LDW280-23275 LDW280-28275	1 1 EA	B3
LDW280M10926	-1 -3	BUSHING	LDW280-23258	4 1	A4
LDW280M10782	-1, -5 & -7	TERMINAL	LDW280-28275	1 EA	C1
LDW280M10777	-3-1	FITTING	LDW280-23304	1	B4
LDW280M10781	-1	FITTING	LDW280-23275	1	B6
LDW280P10809	-1	TUBE	LDW280-23275	1	B4
LDW280-23304	-1-1	FITTING INSTL	LDW280-54012	1	B3
LDW280-23258	-1-1	SUPT. INSTL	LDW280-54002	1	A5
LDW280M10780	-3-1	TERMINAL	LDW280-23275	1 1	B5
LDW280-23275	-1-1	TUBE ASSY	LDW280-23258	1	B7

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD 3587, PKG #15, CCA1821 AMD #1 (5)

REASON FOR EO: PARTS NOT REQD FOR LM-15

DESCRIPTION OF EO: (NOTED ABOVE)

GAEC EO RELEASE: 7-10-69; VK 7/14/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO ☐

DISPOSITION OF PARTS: REWORK ☐ SCRAP ✓

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~ REL
APPROVED BY				FOR/[illegible]	CW			
DATE	7/1/69			7-2-69	7/8/69		7/9/69	7-11-69

PRIORITY: C

DRAWING TITLE: (NOTED ABOVE)

DRAWING NO.: LE0280

EO NO.: 1479

7-18-69

ISSUED BY P. MARTELLO X86048 SECTION VEH DES INT GROUP NO. 335 PL 25

01

NAS 9-1100

LDW 280-11038 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280M11455	QUAL TEST(70)	18
LFM 163	LDW280M11455	SEE NOTE 6"	36
LM	LDW280M10909	DFT (70)	12
↑	↑	LTA-8(18)	6
		LM-15(45)	12
		THRU	
		LM-2 (32)	12
		QUAL TEST(70)	12
↓	↓	LM-1 (31)	12
LM	LDW280M10909	LTA 3(13)	12
PART NO. LDW280-11038-29		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LDW420-13142	LSW905-10073	SER#11	2 EA.
		THRU	
LDW420-13142	LSW905-10073	SER#1	2 EA.
LM	LSW905-10073	TEST (75)	2 EA.
LM	LDW280M11455	QUAL TEST(70)	3 EA.
LFM 163	LDW280M11455	SEE NOTE 6	6 EA.
LM	LSK280M11207	DFT (70)	1 EA
↑	LDW280M10909	DFT (70)	2 EA
	LDW280M10909	LTA-8 (18)	1 EA
	LDW280M10909	LM-15(45)	2 EA
		THRU	
	LDW280M10909	LM-2 (32)	2 EA.
	LDW280M10909	QUAL TEST (70)	1 EA
↓	LDW280M10909	LEM-1(31)	2 EA
LM	LDW280M10909	LTA 3 (13)	2 EA.
PART NO. LDW280-11038-11,-13,-15,-17 -19,-21,		GAEC SCH NO. 31-2	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	B	B	B	B
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED
LAST DASH NO. USED -29
GRUMMAN REL^c INFO B
PRIM NO. 215
JK(001) IIIE-3B 10/20

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II.

DRAWN BY	W. FRANKI - 4-27-66
LAYOUT BY	S.M. KRAMEISEN 5-4-66
CHECKED BY	5-2-66
GR. LEADER	J. Pusateri 5/4/66
VEH.DES. INT.	W.R. BISCHOFF
STRUCTURES	6/5/5
STRUCTURES	5/5
WEIGHT	5-7
RELIABILITY	
PROJ ENGR	5-9-66
REL GROUP	5-11-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CUSHION
ASCENT STAGE ~ CABIN WINDOW ~ INNER

SIZE B
CODE IDENT NO. 26512
LDW 280-11038 B
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	~~SH CHG LTR~~	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
A	1	1.00,1.10, 2.00 & 3.00							E O A1 ®	E.O. A1 INITIAL DWG. RELEASE PARTS MADE PER E.O.	LTA-3, LEM-1 QUAL. TEST	NOT	REQ'D.	FRANKI 28-4-66		
B	1.	1.00, 1.10 2.00, 3.00							E O B1	REMOVED -23, -25 & -27, ADDED -29,	LTA-3(13) LM-1 (31) QUAL TEST		✓	E. COX 7-11-68		
	2.	1.00, 1.10,							E O B2	ADDED LTA-8(18) & LEM-2(32) TO M/B	LM-2 (32 LTA-8(18)	✓				
	3.	1.10, 3.00							E O B3	IN NOTE SECT. REVISED NOTE 4 AS FOLLOWS: "73X, ORANGE" WAS "73X, BLACK"	LM-1 (31) LTA-3 QUAL TEST(70)	✓				
	4.	1.10, 1.00							E O B4	IN M/B, FOR -11, -13, -15, -17, -19, -21 & -29, ADDED LTA-8(18), LEM-2 (32) THRU LM-15(45)	LTA-8 (18), LM-2 (32) THRU LM-15(45)	NOT	REQ'D.			
	5.	1.00, 1.10					✓		E O B5 LCD 3084	IN M/B OF -11, -13, -15, -17, -19 & -21, ADDED (2) EA. ON LDW280M10909 & 1 EA ON LSK280-11207, IN M/B OF -29 ADDED (12) REQ'D ON LDW280M10909	DFT (70)	NOT	REQ'D.			
	6	1.00, 1.10 3.00			LFM 163		✓		EO B6 LCD 3084	IN M/B OF -11, -13, -15, -17, -19, & -21 ADDED (6) EA. ON LM-3, -4, & -5 & 3 EA. ON QUAL TEST.; IN M/B OF -29 ADDED (36) REQ'D ON LM-3, -4, & -5 & (18) ON QUAL. TEST (72); ADDED NOTE 6	LM-3, -4 & -5 QUAL TEST	NOT	REQ'D	F. ALESSIO 10-23-68		
	7	1.00, 1.10					✓		EO B7 LCD-2504	ON -11, -13, -15, -17, -19, & -21, ADDED N/A LSW905-10073 EFF TEST (75), SER. NO. 1 THRU #11	TEST (75) SER #1 THRU SER. #11	NOT	REQ'D			
	8	1.00, 1.10				✓			EO B8	IN M/B OF -11, -13, -15, -17, -19, & -21, QTY REQ'D (1) WAS (2). FOR -29 (6) REQ'D WAS (12) N/A LDW280M10909	LTA-8		✓		10-23-68	

FOR CONTINUATION OF REVISIONS SEE SHEET

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW 280-11038	B
SCALE NONE		SHEET 1.10	

ENG 77.3 5-64

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11038-29	E	CUSHION	SILASTIC S-6526-4-300			NOTE 1&3	NONE	NONE	
		-21									
		-19									
		-17						NOTE 1&3			
		-15						NOTE 1&2			
		-13									
		LDW 280-11038-11	E	CUSHION	SILASTIC S-6526-4-300			NOTE 1&2	NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW 280-11038	B
SCALE NONE			SHEET 2.00

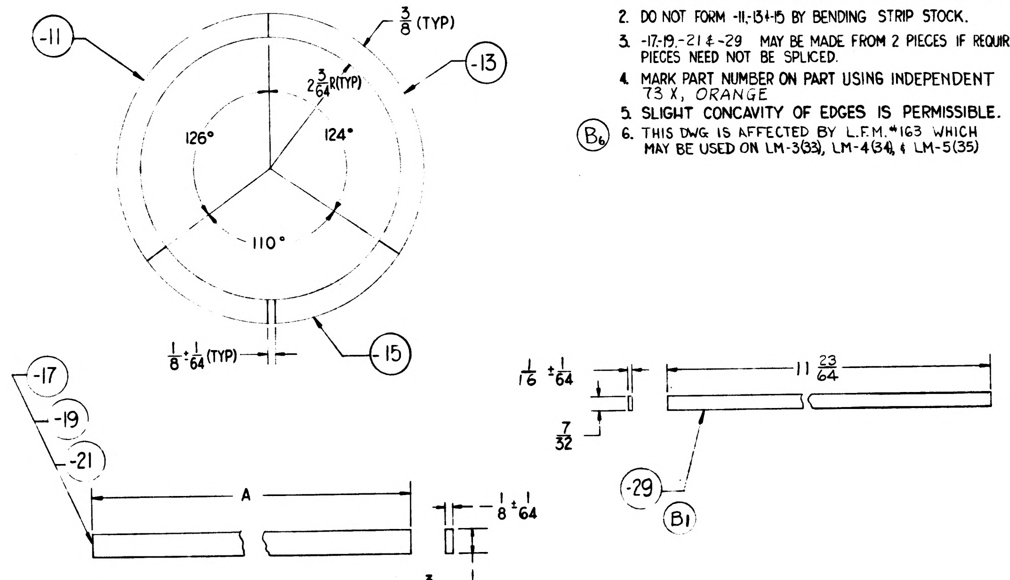
ENG 77.2 7-65

01

NAS 9-1100

NOTES:

1. FOR -11,-13,-15,-17,-19,-21 & -29 MAKE FROM SILICONE RUBBER SHEET, COLOR WHITE, HARDNESS: SHORE "A" 50±5 DUROMETER PER LSM 14-4058. MAY BE PURCHASED FROM DOW CORNING CORP (71984)
2. DO NOT FORM -11,-13 & -15 BY BENDING STRIP STOCK.
3. -17,-19,-21 & -29 MAY BE MADE FROM 2 PIECES IF REQUIRED. PIECES NEED NOT BE SPLICED.
4. MARK PART NUMBER ON PART USING INDEPENDENT 73 X, ORANGE
5. SLIGHT CONCAVITY OF EDGES IS PERMISSIBLE.
6. (B6) THIS DWG IS AFFECTED BY L.F.M.#163 WHICH MAY BE USED ON LM-3(33), LM-4(34), & LM-5(35)



PART NO.	"A"
LDW 280-11038-17	19 1/8
LDW 280-11038-19	16 1/2
LDW 280-11038-21	16 3/4

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ [redacted].	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
LEM	SIZE C	CODE IDENT NO. 26512	LDW 280-11038	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

LDW280-11038 B

01

NAS 9-1100

LDW280-11042 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LFM 126	LDW280-28279	LTA-8(18)	1
LM	LDW280-54279	LM-15(45)	1
		LM-14(44)	1
		LM-13 (43	1
		LM-12(42)	1
		LM-11 (41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37	1
LM		LM-6(36)	1
LFM140		LM-5(35)	1
LFM140	LDW280-54279	LM-4(34)	1
LM	LDW280-53279	LM-3(33)	1
	LDW280-28279	LM-2(32)	1
	LDW280-28279	LM-1(31)	1
LM	LDW280-28279	LTA-8(18)	1

PART NO. LDW280-11042-15

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LFM 126	LDW280-28279	LTA-8(18)	1
LM	LDW280-28279	LM-2(32)	1
LM	LDW280-28279	LM-1(31)	1
LM	LDW280-28279	LTA-8(18)	1

PART NO. LDW280-11042-17

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53279	LM 3(33)	1 EA
	LDW280-28279	LEM 2(32)	1 EA.
	LDW280-28279	LEM 1(31)	1 EA.
LM	LDW280-28279	LTA-8(18)	1 EA.

PART NO. LDW280-11042-11,-12,-13, 30

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A		A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED J-J
LAST DASH NO. USED -17

GRUMMAN REL INFO
PRIM NO. K(001)
2/5

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.010 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM 1
DOCUMENTATION TYPE II
DRAWN BY SALVADOR
LAYOUT BY SALVADOR
CHECKED BY
GR. LDR J. Pusateri 4/4
YDI 4/4
STR. 4/5
STR. Alderman 4/5
THERMO
WEIGHTS 4-11
PROJ ENGR 4-12-66
REL GROUP Botte 4-12-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT -
A/S CABIN - FF LOWER
THERMAL SHIELD

SIZE B
CODE IDENT NO. 26512
LDW280-11042 A
SCALE NONE
SHEET 1 OF 3

REV "A" CDR 5-22-68

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GAT~~ APPD
											REWORK	SCRAP			
A	1	1.00,1.10						LEO 280-428	FOR -11,-12,-13 & -15 ADDED LM-3 THRU LM-15 EFF., ADDED SH 1.10	LM-3 THRU LM-15	NOT	REQD	J. AVILES 5-9-68	☒	☒
	2	1.00,1.10		LFM 140		✓		LEO280-901 LCD 2360	FOR -15 REVISED N/A, N/A WAS LDW280-53279 FOR LM-4 AND SUBSEQUENT	LM-4 THRU LM-15					
	3	1.10,3.00		DEC 3-LM-45					FOR -15, 1 3/32 (TRUE TYP) WAS 25/32 (TRUE TYP)	NOT REQD				5/22/68	5-24-68
	4	1.00		LFM 126		✓		LCD 1021-33 CCA 498 OK	ON -15 & -17 ADDED END ITEM LFM 126 REQUIREMENTS D.J.	LTA-8					
	5	1.00		LFM 140		✓		LCD 2360 OK	FOR -11, -12 & -13 REMOVED LM 4 THRU 15 EFF. D.J.	LM4 THRU LM15		-11, -12 -13			

LTR	GR LEADER	VEH DES INT	STRUCTURE	STRUCTURE	WEIGHTS	RELIABILITY	THERMO				
A	FDR 5/18	5/18/68	5/21/68	for FEB			5-20-68				

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11042	A
SCALE	NONE		SHEET 1.10

ENG 77.3 5-65

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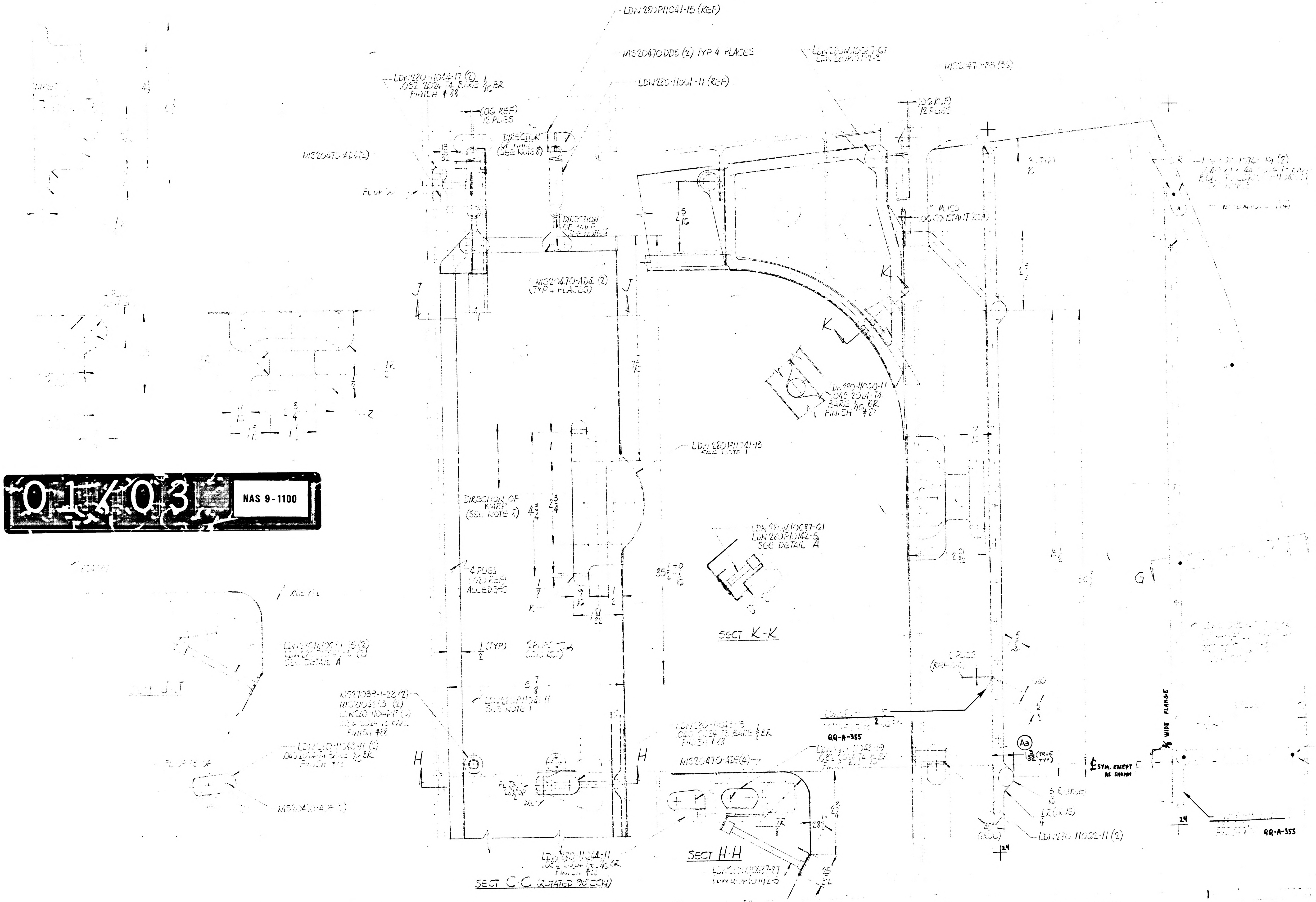
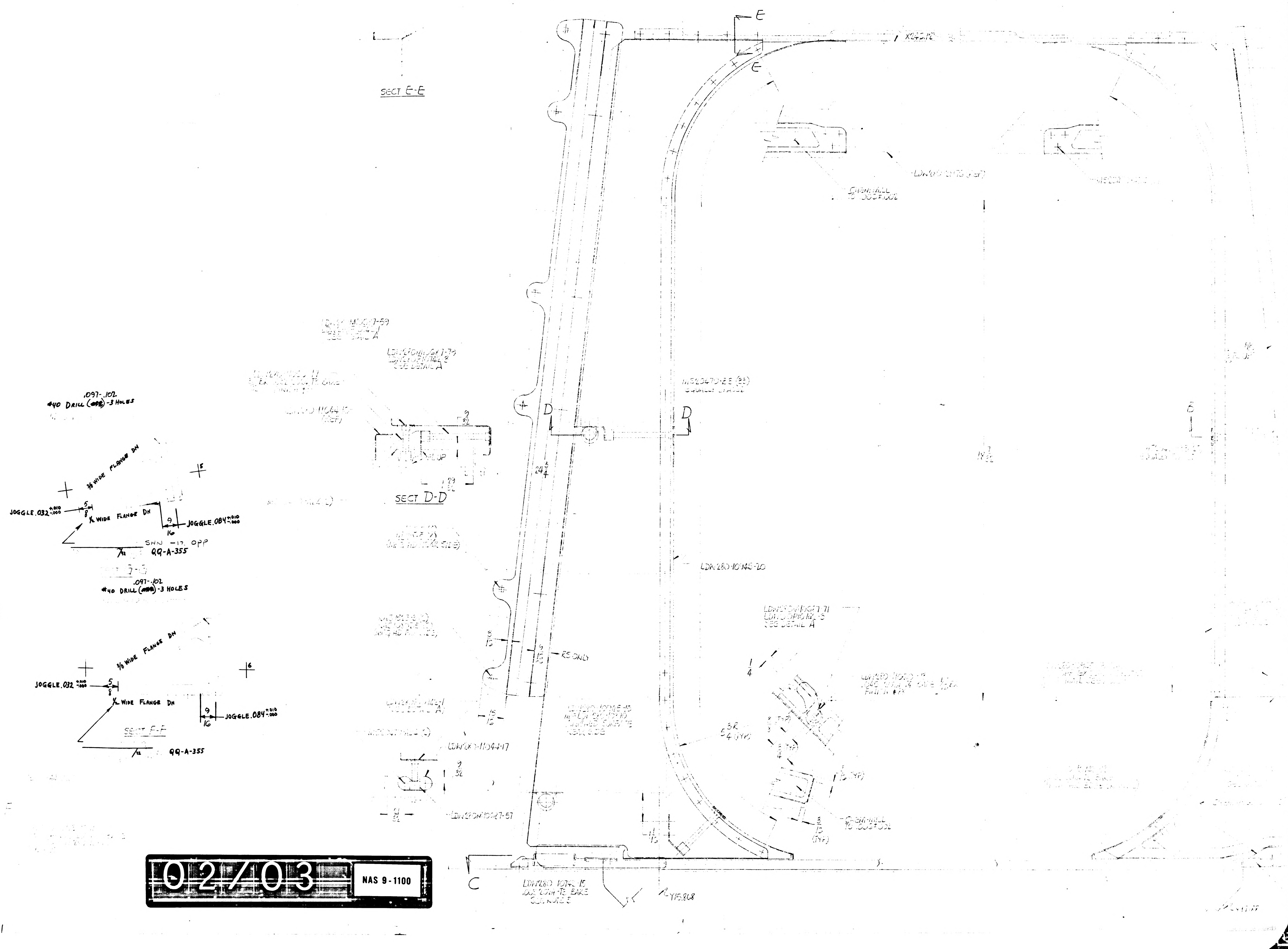
NAS 9-1100

01/03 NAS 9-1100

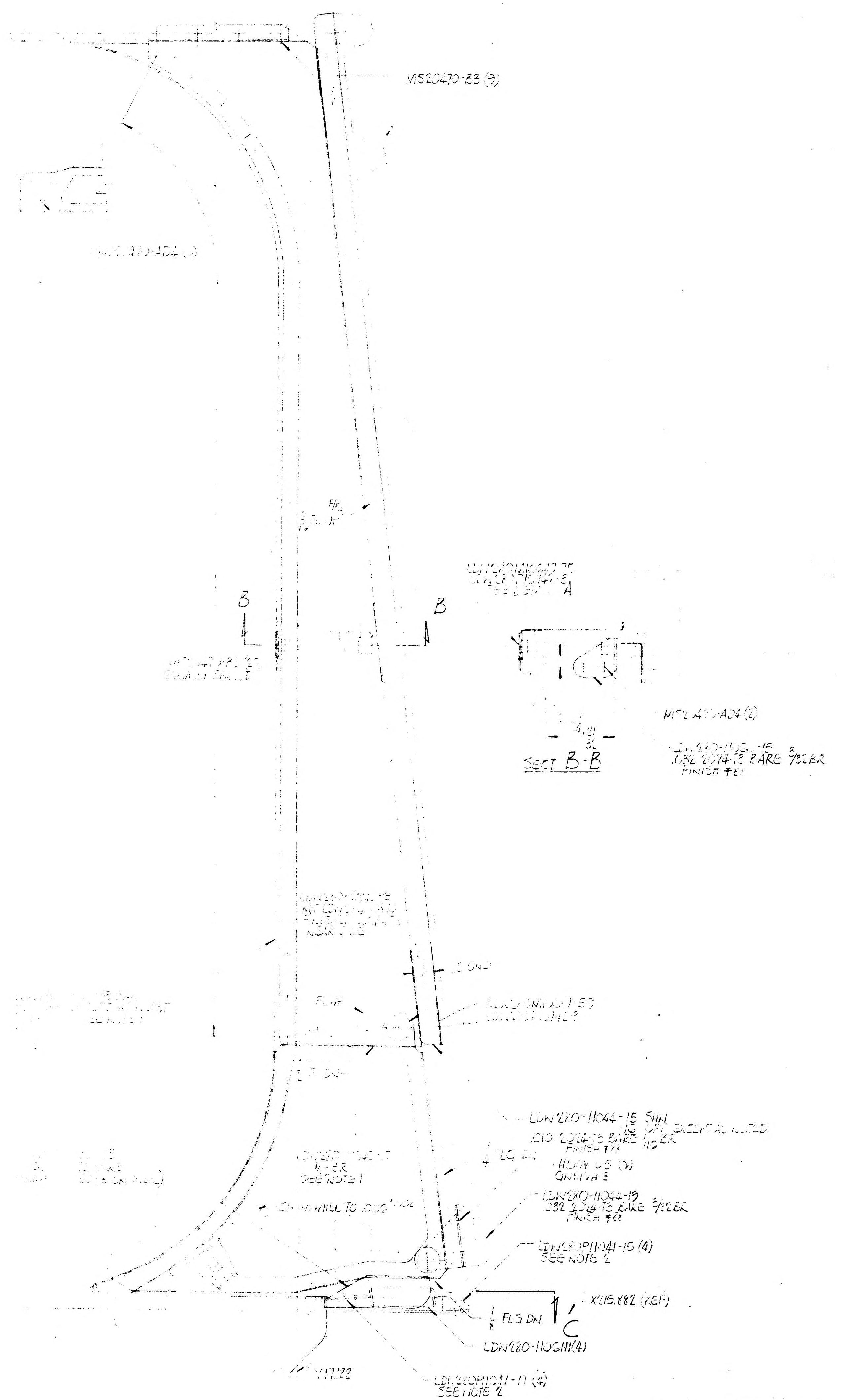


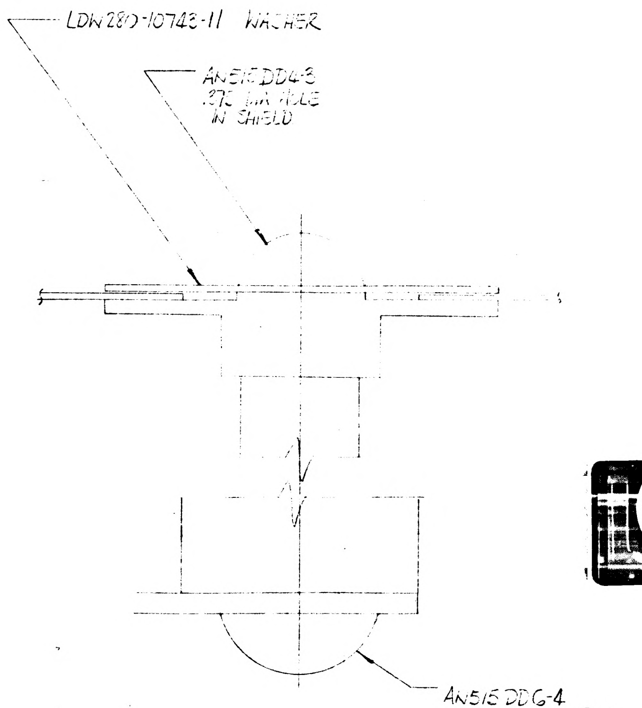
LDW280P11041-15 (REF)
MS20470DD5 (2) TYP 4 PLACES
LDW280-11061-11 (REF)
LDW280-11044-17 (2) .032 2024-T4 BARE 1/16 BR FINISH #88
(.06 REF) 12 PLIES
DIRECTION OF WARP (SEE NOTE 8)
MS20470-AD4(2)
MS20470-AD4 (2) (TYP 4 PLACES)
J
J
2 5/16
K
K
LDW280-11050-11 .045 2024-T4 BARE 1/16 BR FINISH #8
LDW280P11041-13 SEE NOTE 1
DIRECTION OF WARP (SEE NOTE 8)
4 3/4
2 3/4
4 PLIES .025 REF ALL EDGES
LDW280-11050-G1 LDW280P11042-5 SEE DETAIL A
35 1/2 +0 -1/16
SECT K-K
G
1/2 (TYP)
SEE DETAIL A
SECT J-J
MS27039-1-22 (2)
H
H
MS20470-AD5(4)
SECT H-H
LDW280-11044-11 .032 2024-T4 BARE 1/16 BR FINISH #88
SECT C-C (ROTATED 90° CCW)
QQ-A-355
QQ-A-355
A3
℄ SYM. EXCEPT AS SHOWN
1/4 WIDE FLANGE
LDW280-11062-11 (2)


SECT E-E
E
E
X645.12
.097-.102
#40 DRILL (   ) -3 HOLES
3/8 WIDE FLANGE DN
5
JOGGLE .032 +.010 -.000
5/8
1/2 WIDE FLANGE DN
9/16
JOGGLE .084 +.010 -.000
SHN -17 OPP
1/32
QQ-A-355
SECT G-G
.097-.102
#40 DRILL (   ) -3 HOLES
3/8 WIDE FLANGE DN
6
JOGGLE .032 +.010 -.000
5/8
1/2 WIDE FLANGE DN
9/16
JOGGLE .084 +.010 -.000
SECT F-F
1/32
QQ-A-355
QQ-A-355
SECT D-D
D
D
24 3/4
RS ONLY
LDW280-10145-20
5R 54 (TYP)
LDW280-11044-17
LDW280-10147-57
C
Y15.868
SEE DETAIL A

02/03

NAS 9-1100


MS20470-B3 (3)
MS20470AD4 (2)
B
B
LDW280-10742-3
SEE DETAIL A
SECT B-B
4 21/32
MS20470AD4 (2)
LDW280-11050-15
.032 2024-T3 BARE 3/32 BR
FINISH #88
FLG DN
LDW280-11044-15 SHIM
1/16 OPT EXCEPT AS NOTED
.010 2024-T3 BARE 1/16 BR
FINISH #88
1/4 FLG DN
LDW280-11044-19
.032 2024-T3 BARE 3/32 BR
FINISH #88
LDW280P11041-15 (4)
SEE NOTE 2
X215.882 (REF)
1/8 FLG DN
C
LDW280-11061I(4)
LDW280P11041-17 (4)
SEE NOTE 2


LDW280-10743-11 WASHER
AN515DD4-3
.275 DIA HOLE
IN SHIELD
AN515DDG-4
.140 DIA HOLE IN CLIP

DETAIL A
NO SCALE

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

DWG SIZE 34 X

NOTES:

[redacted]

1.0 THIS DRAWING WILL BE REDRAWN ON A PRODUCTION FORMAT.

[redacted]

2.0 DRAWING MAY BE SCALED FOR DIMS NOT SHOWN.

[redacted]

3. ALL INFO NOT REQD. FOR MANUFACTURE OF LDW280-11042 IS REFERENCE INFO ONLY.

03/03 NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE J	CODE IDENT NO. 26512	LDW280-11042	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

LDW280-11042 A

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11042-17	E	ANGLE	SEE FLD						
								-15		ANGLE							
								-13		SUPPORT							
								-12		SUPPORT							
								LDW280-11042-11	E	SUPPORT	SEE FLD						

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11042

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280 | EO NO. 1062
CONTROL INFO NO. LDW280-B 4505

IN M/B ADD LM-4(34) EFF. N/A LDW280-53279
FOR THE FOLLOWING DWGS. & DASH NO. *

DWG. NO.	DASH NO. *	CHG. NO.
LDW280-10945	-13, -45, -33, -34, -39	F2 ✓
-10743	-13, -15, -17, -19	H1 ✓
-11042	-15	B1 ✓
-11044	-12, -13, -21, -22, -23	B1
-11060	-19, -21, -23, -29	A7
-11061	-11	A3
-11062	-11	A3
-11729	-11, -12, -13 -14, -15, -16	A3
-11736	-11, -13, -14	A2
-11759.	-13, -15, -17, -19	B7
-14344	-1, -3	F4
11043	-11, -13 -15	A4
LDW280-P11041	-21, -13, -15, -17	D1

REWORK INFO. PART IN EXISTENCE MAY BE USED.

NO. REQ'D/MOD SAME AS LM-3(33) REQ.

LFM

01 NAS 9-1100

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	✓	LCD 2360 PKG 32 SH 10 & 11 (5)

REASON FOR EO: UPDATED LM-4 (34) REQ.

DESCRIPTION OF EO: FOR DASH * ADDED LM-4 EFF. ~ N/A LDW280 - 53279

GAEC EO RELEASE: JK 7/20

MODEL	~~PROCURING ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 140	LM-4 (34)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO

DISPOSITION OF PARTS: NOT REWORK | REQ. SCRAP

	VDI	~~SUPPORT~~ THERM	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
APPROVED BY	JAF			RMS			JAF	JM
DATE	7/13/68	7/16/68		7/13/68	7/16/68		7/16/68	7/20

PRIORITY: C

DRAWING TITLE: SEE DWG.

DRAWING NO.: LEO280

EO NO.: 1062

7-13-68
ISSUED BY H. TREFFEISEN x 7033 SECTION VDI GROUP NO. 335 PL 25

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 1063
CONTROL INFO NO. LDW 280 B4506

IN M/B REMOVE LM-4(34) EFF. N/A LDW280-54279
FOR THE FOLLOWING DWGS. & DASH NO. *

DWG. NO.	DASH NO. *	CHG. NO.
LDW280-10945	-13, -39, -51, -49, -50	F3
-10743	-15 -13, -17, -19	H2
-11042	-15	B2
-11043	-11, -13, -15	A5
-11044	-12, -13, -21 -22, -23	B2
-11060	-21, -19, -23, -29	A8
-11061	-11	A4
-11062	-11	A4
-11729	-11, -12, -13 -14, -15, -16	A4
-11736	-11, -13, -14	A3
-11759	-13, -15, -19	B8
-14344	-1, -3	F5
-12003	-1, -15	A1
-12008	-11, -13	A9
LDW-280-P11041	-21, -13, -15, -17	D2

LFM

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD2360 PKG 32 SH 9 & 10 (5)

REASON FOR EO: UPDATED LM-4 REQ

DESCRIPTION OF EO: FOR DASH *
REMOVED LM-4 EFF N/A LDW280-54279

GAEC EO RELEASE: JK 7/20/68

MODEL	EFFECTIVITY ~~PROCURING ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 140	LM-4 (34)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECOR. EO
DISPOSITION OF PARTS: REWORK | SCRAP ✓

APPROVED BY									
DATE	7/12/68	7/16/68		7/12/68			7/16/68	7/24/68
	VDI	~~SUPPORT~~ THERM	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C
DRAWING TITLE: SEE DWG.
DRAWING NO.: LEO 280
EO NO.: 1063

7-18-68
ISSUED BY H. TREFFEISEN x 7033 SECTION VDI GROUP NO. 335 PL 25

01 NAS 9-1100

LDW280-11043 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54279	LM-15(45)	1EA
		LM-14(44)	1EA
		LM-13(43)	1EA
		LM-12(42)	1EA
		LM-11(41)	1EA
		LM-10(40)	1EA
		LM-9(39)	1EA
		LM-8(38)	1EA
		LM-7(37)	1EA
		LM-6(36)	1EA
	LDW280-54279	LM-5(35)	1EA
	LDW280-53279	LM-4(34)	1EA
		LM-3(33)	1EA
		LM-2(32)	1EA
	LDW280-53279	LM-1(31)	1EA
LM	LDW280-28279	LTA-8(18)	1EA

PART NO. LDW 280-11043-13&-15 — GAEC SCH NO. 30-

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO. — GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54279	LM-15(45)	2
		LM-14(44)	2
		LM-13(43)	2
		LM-12(42)	2
		LM-11(41)	2
		LM-10(40)	2
		LM-9(39)	2
		LM-8(38)	2
		LM-7(37)	2
		LM-6(36)	2
	LDW280-54279	LM-5(35)	2
	LDW280-53279	LM-4(34)	2
	LDW280-53279	LM-3(33)	2
	LDW280-28279	LM-2(32)	2
	LDW280-28279	LM-1(31)	2
LM	LDW280-28279	LTA-8(18)	2

PART NO. LDW 280-11043-11 — GAEC SCH NO. 30-

WORK PKG FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		1.10		2.00		3.00		
REV	A		A		A		A		
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -15

GRUMMAN REL INFO A

PRIM NO. VK(001)

2/5 ME-1A 3/24/9

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ± 1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM

DOCUMENTATION TYPE II

DRAWN BY	SALVADOR	WEIGHTS	D. ROBESCH 4/11
LAYOUT BY	SALVADOR		
CHECKED BY SAB A			
GR LDR	J. PUSATERI 4/4		
VDI	W. BISCHOFF 4/4		
STR	A.P.J.V FEB 4/3	PROJ ENGR	J. ALBER 4/28
STR	HILDERMAN 4/5	REL GROUP	BOTTI 5-2-66
THERMO	A. KERTY 4-8-66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP
ASCENT STAGE - CABIN - FRONT FACE
LOWER

SIZE B — CODE IDENT NO. 26512 — LDW280-11043 A (A)

SCALE NONE — SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11043 NO CHG 5-2-66

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED NO CHG - LAST REV NO CHG - SH SIZE C WAS J LOFTED DWG WAS DIM DWG ADDED SH 1.10 E. REGELMANN 3-17-69						
A	1	1.00 & 1.10							INC LEO 280-428	LM-3 THRU LM-15			REGELMANN 3-17-69		3-24-69
	2	1.00							INC LEO 280-437	LM-3 THRU LM-15					
	3	1.00		LFM 140					INC LEO 280-901	LM-4 THRU LM-15					
	4	1.00		LFM 140					INC LEO 280-1062	LM-4					
	5	1.00		LFM 140					INC LEO 280-1063	LM-4					

CHG APPROVED LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	THERMO	WEIGHTS
A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11043	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11043-15	E	CLIP	AL ALY SH	QQ-A-355	2024-T3	.040 × 2 × 3	NONE	88	B3
		-13		CLIP	AL ALY SH	QQ-A-355	2024-T42	.032 × 3 × 3	NONE	88	A3
		LDW280-11043-11	E	CLIP	AL ALY SH	QQ-A-355	2024-T42	.040 × 2 × 3	NONE	88	A4

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11043	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65

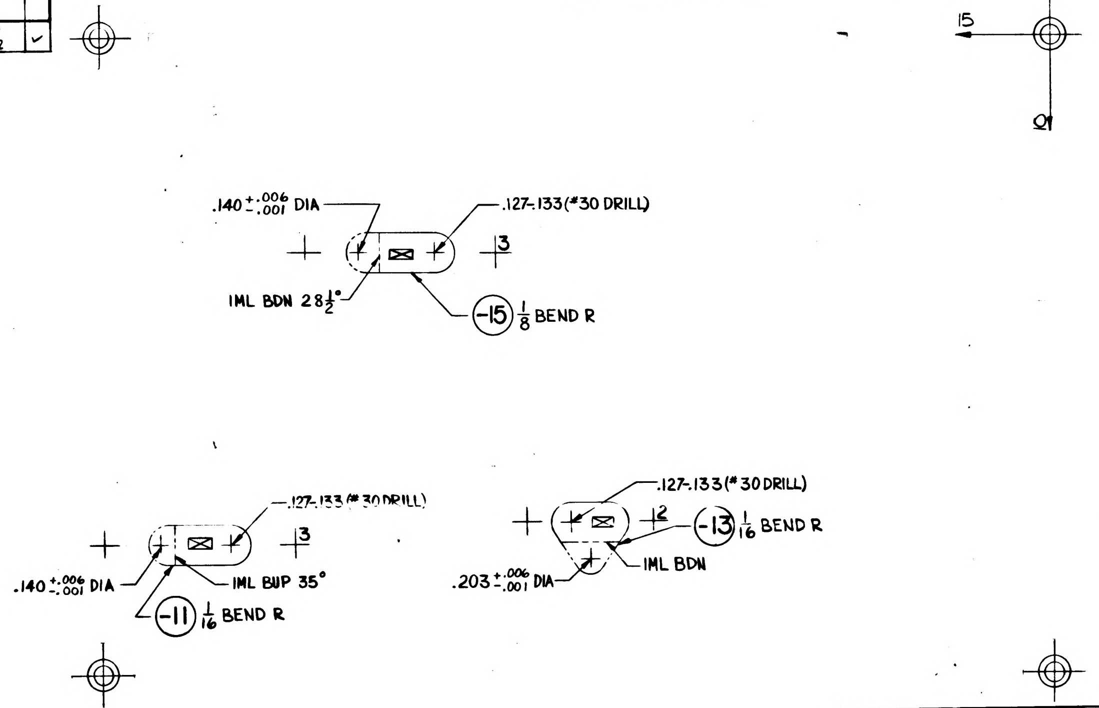
01

NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY~~	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
INSTALL RIVETS IN ACCORDANCE WITH	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.



15
.140 +.006 -.001 DIA
.127-.133(#30 DRILL)
3
IML BDN 28½°
-15 1/8 BEND R
.127-.133(#30 DRILL)
3
.140 +.006 -.001 DIA
IML BUP 35°
-11 1/16 BEND R
.127-.133(#30 DRILL)
2
-13 1/16 BEND R
IML BDN
.203 +.006 -.001 DIA

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714

SIZE	CODE IDENT NO.		
C	26512	LDW280-11043	A
SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

NAS 9-1100

LDW280-11043 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28279	LM-2(32)	2
LM	LDW280-28279	LM-1(31)	2
LM	LDW280-28279	LTA-8(18)	2
LDW280-11044-17			
LFM-140	LDW280-54279	LM-5(35)	2EA
LFM-140	LDW280-54279	LM-4(34)	2EA
LM	LDW280-54279	LM-15(45)	2EA
		LM-14(44)	2EA
		LM-13(43)	2EA
		LM-12(42)	2EA
		LM-11(41)	2EA
		LM-10(40)	2EA
		LM-9(39)	2EA
		LM-8(38)	2EA
		LM-7(37)	2EA
		LM-6(36)	2EA
		LM-5(35)	2EA
	LDW280-54279	LM-4(34)	2EA
	LDW280-53279	LM-3(33)	2EA
	LDW280-28279	LM-2(32)	2EA
	LDW280-28279	LM-1(31)	2EA
LM	LDW280-28279	LTA-8(18)	2EA
PART NO. LDW280-11044-13		GAEC SCH NO.	

A

LDW280-11044

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM-140	LDW280-54279	LM-5(35)	1EA
LFM-140	LDW280-54279	LM-4(34)	1EA
LM	LDW280-54279	LM-15(45)	1EA
		LM-14(44)	1EA
		LM-13(43)	1EA
		LM-12(42)	1EA
		LM-11(41)	1EA
		LM-10(40)	1EA
		LM-9(39)	1EA
		LM-8(38)	1EA
		LM-7(37)	1EA
		LM-6(36)	1EA
		LM-5(35)	1EA
	LDW280-54279	LM-4(34)	1EA
LM	LDW280-53279	LM-3(33)	1EA
PART NO. LDW280-11044-21,22 & -23		GAEC SCH NO. 30-	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM-140	LDW280-54279	LM-5(35)	1
LFM-140	LDW280-54279	LM-4(34)	1
LM	LDW280-54279	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
	LDW280-54279	LM-4(34)	1
	LDW280-53279	LM-3(33)	1
	LDW280-28279	LM-2(32)	1
	LDW280-28279	LM-1(31)	1
LM	LDW280-28279	LTA-8(18)	1
LDW280-11044-12			
LM	LDW280-28279	LEM 2(32)	1 EA
LM	LDW280-28279	LEM 1(31)	1 EA
LM	LDW280-28279	LTA-8(18)	1 EA
PART NO. LDW280-11044-15,-16,-19		GAEC SCH NO. 30-	

35

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00					
REV	A	A	A		A					
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED —
LAST DASH NO. USED -23
GRUMMAN REL INFO
PRIM NO. 2/5
16(001) MP1 6-4 RS 4-7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.010 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM 1
DOCUMENTATION TYPE II
DRAWN BY SALVADOR
WEIGHTS A Rabisch 4-8
LAYOUT BY SALVADOR
CHECKED BY
GR. LDR. J. Puretin 4/4
VDI 4/4
STR. 4/5
STR. Alderman 4/5
THERMO For A. KATZ
PROJ ENGR 4-28-66
REL GROUP 5-2-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP
A/S CABIN - FF LOWER

SIZE B
CODE IDENT NO. 26512
LDW280-11044 A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

THIS IS AN ORIGINAL DWG

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED SH 3.00 NO CHG LAST REV NO CHG (SH SIZE F WAS J) LOFTED DWG WAS DIMENSIONED R.DOTTIN 7-18-68						
A	1	1.00, 1.10, 2.00, 3.00						EOA1	ON F/D & BM LDW280-11044-12 REPLACES LDW280-11044-11	LTA-8, LM-1 LM-2		-11	R. DOTTIN 7-18-68		
	2	1.00, 1.10						LEO280-428	FOR -11 & -13 ADDED LM-3 THRU LM-15 EFFECTIVITY	LM-3 THRU LM-15	NOT	REQD			
	3	1.10, 3.00						EOA3	FOR -19: IML BUP CLOSED 18° WAS IML BUP. ADDED IML BDN 18°	LTA-8, LM-1 LM-2	✓				
	4	1.00, 1.10						LEO280-437	FOR -19 & -17 ADDED LM-3 THRU LM-15 EFFECTIVITY	LM-3 THRU LM-15	NOT	REQD			
	5	1.00, 1.10						LEO280-447	FOR -12 ADDED N/A & EFFECTIVITIES. (PREVIOUSLY INCORPORATED PER LEO280-428						
	6	1.10, 3.00						EOA6	TRIMMED -15 & -16	LTA-8, LM-1 LM-2	✓				
	7	1.00, 1.10, 2.00, 3.00					✓	EOA7	IN MOD BLOCK FROM N/A LDW280-53279 EFF. LM-3 LM-15 REMOVED -17 (2) & -19 & ADDED -21, -22 & -23	LM-3 THRU LM-15		-17 -19			
	8	1.00, 1.10		LFM-140		✓		LEO280-901 LCD-2360	FOR -12, -13, -21, -22 & -23 REVISED U/A, NA WAS LDW280-53279 FOR LM-4 (34) AND SUB	LM-4 THRU LM-15	NOT	REQD			
	9	3.00					✓	EO A9	FOR -23 REMOVED # 30 (.127-.133) HOLE (1)	LM-8 THRU LM-15	✓				
	10	1.10							REF LEO280-428: IN DESCRIPTION OF EO -11 S/B -12 ES	LM 3 THRU LM-15	NOT	REQD			

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	THERMO	WEIGHTS
	A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11044	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11044-23	E	CLIP	AL ALY SH	QQ-A-250/4	2024-T3	.040 X 2 X 3	NONE	88	
								-22	↕	↕	↕	QQ-A-250/4	2024-T42	.040 X 2 X 2	↕	↕	
								-21	↕	↕	↕	QQ-A-250/4	2024-T42	.040 X 2 X 3	↕	↕	
								-19	↕	↕	↕	QQ-A-250/4	2024-T3	.032 X 2 X 2	↕	↕	
								-17	↕	CLIP	↕	QQ-A-250/4	2024-T4	.032 X 2 X 2	↕	↕	
								-16	↕	ANGLE	↕	QQ-A-355	2024-T3	.010 X 2 X 25	↕	↕	
								-15	↕	ANGLE	↕	QQ-A-355	2024-T3	.010 X 2 X 25	↕	↕	
								-13	↕	WASHER	↕	QQ-A-355	2024-T3	.032 X 1 1/8	↕	↕	
								LDW280-11044-12	E	CLIP	AL ALY SH	QQ-A-355	2024-T3	.032 X 2 X 2	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

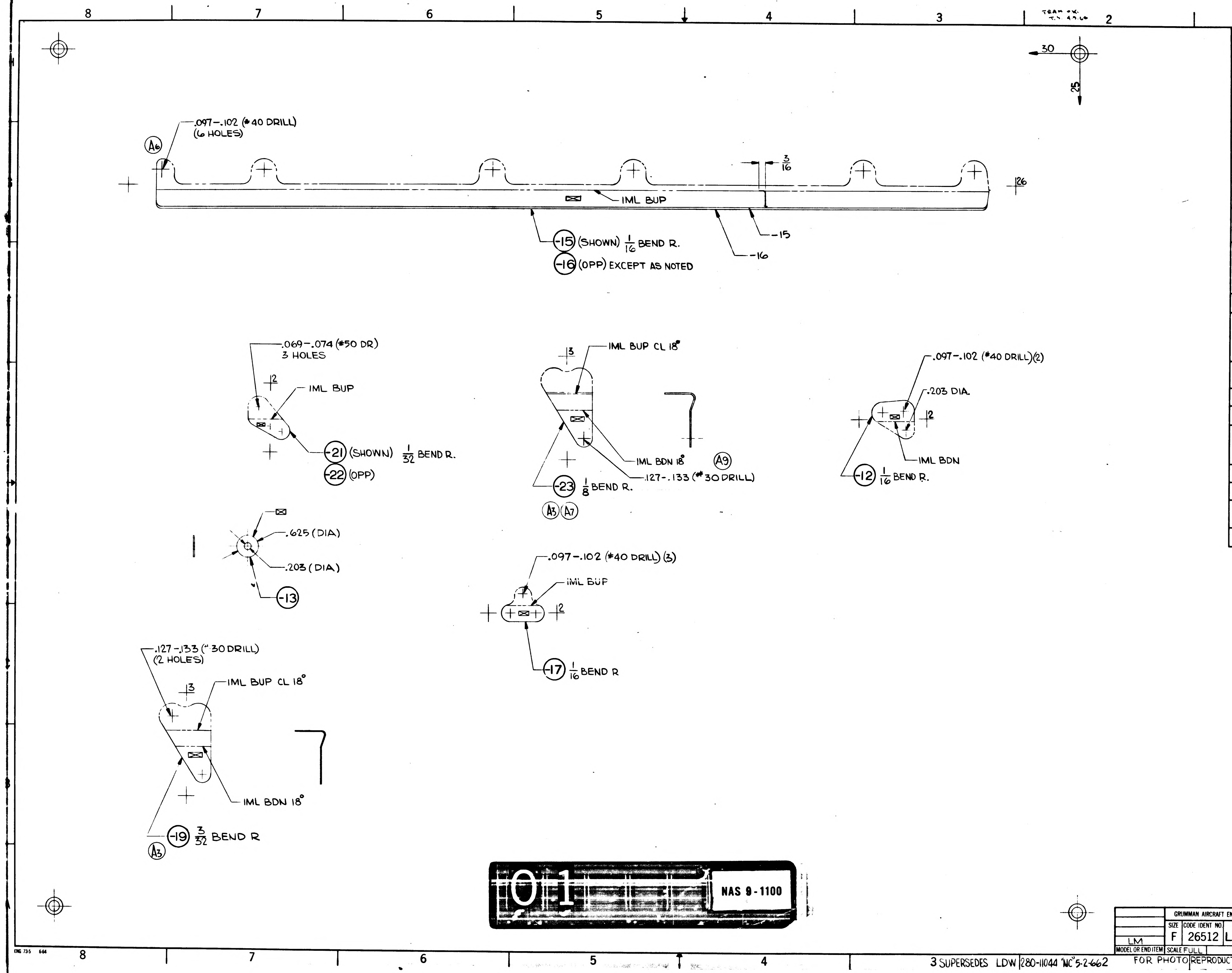
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11044	A
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



.097-.102 (#40 DRILL)
(6 HOLES)
A6
3/16
.26
IML BUP
-15 (SHOWN) 1/16 BEND R.
-16 (OPP) EXCEPT AS NOTED
-15
-16
30
25
.069-.074 (#50 DR)
3 HOLES
.2
IML BUP
-21 (SHOWN) 1/32 BEND R.
-22 (OPP)
.3
IML BUP CL 18°
IML BDN 18°
A9
.127-.133 (#30 DRILL)
-23 1/8 BEND R.
A3 A7
.097-.102 (#40 DRILL) (2)
.203 DIA.
.2
IML BDN
-12 1/16 BEND R.
.625 (DIA)
.203 (DIA)
-13
.097-.102 (#40 DRILL) (3)
IML BUP
.2
-17 1/16 BEND R
.127-.133 (#30 DRILL)
(2 HOLES)
.3
IML BUP CL 18°
IML BDN 18°
-19 3/32 BEND R
A3
01
NAS 9-1100

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN NAS & MS A RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LM	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
	SIZE F	CODE IDENT NO. 26512	LDW280-11044	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

3 SUPERSEDES LDW 280-11044 "NC" 5-2-66 2

FOR PHOTO REPRODUCTION

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280 EO NO. 1062
CONTROL INFO NO. LDW280-B 4505

IN M/B ADD LM-4(34) EFF. N/A LDW280-53279
FOR THE FOLLOWING DWGS. & DASH NO. *

DWG. NO.	DASH NO. *	CHG. NO.
LDW280-10945	-13, -45, -33, -34, -39	F2 ✓
-10743	-13, -15, -17, -19	H1 ✓
-11042	-15	B1 ✓
-11044	-12, -13, -21, -22, -23	B1 ✓
-11060	-19, -21, -23, -29	A7
-11061	-11	A3
-11062	-11	A3
-11729	-11, -12, -13 -14, -15, -16	A3
-11736	-11, -13, -14	A2
-11759	-13, -15, -17, -19	B7
-14344	-1, -3	F4
11043	-11, -13 -15	A4
LDW280-P11041	-21, -13, -15, -17	D1

REWORK INFO. PART IN EXISTENCE MAY BE USED.

NO. REQ'D/MOD SAME AS LM-3 (33) REQ.

NAS 9-1100

01

LFM

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD 2360 PKG 32 SH 10 & 11 (5)

REASON FOR EO: UPDATED LM-4 (34) REQ.

DESCRIPTION OF EO: FOR DASH * ADDED LM-4 EFF. ~ N/A LDW290 - 53279

GAEC EO RELEASE: CK 7/20

MODEL	PROCURING ~~ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 140	LM-4 (34)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REWORK / REQ. SCRAP

APPROVED BY								
DATE	7/13/68	7/16/68		7/13/68	7/16/68		7/16/68	7/20/68
	VDI	~~SUPPORT~~ THERM	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY C

DRAWING TITLE SEE DWG.

DRAWING NO. LEO280

EO NO. 1062

7-13-68
ISSUED BY H. TREFFEISEN x 7033 SECTION VDI GROUP NO. 335 PL 25

ENG 37.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 1063
CONTROL INFO NO. LDW280 B4506

IN M/B REMOVE LM-4(34) EFF. N/A LDW28054279 FOR THE FOLLOWING DWGS. & DASH NO. *

DWG. NO.	DASH NO. *	CHG. NO.
LDW280-10945	-13, -39, -51, -49, -50	F3
-10743	-15 -13, -17, -19	H2
-11042	-15	B2
-11043	-11, -13, -15	A5
-11044	-12, -13, -21 -22, -23	B2
-11060	-21, -19, -23, -29	A8
-11061	-11	A4
-11062	-11	A4
-11729	-11, -12, -13 -14, -15, -16	A4
-11736	-11, -13, -14	A3
-11759	-13, -15, -19	B8
-14344	-1, -3	F5
-12003	-1, -15	A1
-12008	-11, -13	A9
LDW-280-P11041	-21, -13, -15, -17	D2

LFM

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD2360 PKG 32 SH 9 & 10 (5)

REASON FOR EO: UPDATED LM-4 REQ

DESCRIPTION OF EO: FOR DASH * REMOVED LM-4 EFF N/A LDW280-54279

GAEC EO RELEASE: JK 7/20/68

MODEL	EFFECTIVITY: ~~PROCURING ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 140	LM-4 (34)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK SCRAP ✓

APPROVED BY								
DATE	7/12/68	7/16/68		7/12/68	7/12/68		7/16/68	7/20/68
	VDI	~~SUPPORT~~ THERM	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C
DRAWING TITLE: SEE DWG.
DRAWING NO.: LEO 280
EO NO.: 1063

7-18-68
ISSUED BY H. TREFFEISEN x 7033 SECTION VDI GROUP NO. 335 PL 25

01
NAS 9-1100

LDW280-11045

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23320	LTA-1(11)	1 EA.
LEM	LDW280-23320	LEM-6(36)	1 EA.
		LEM-5(35)	
		LEM-4(34	
		LEM-3(33)	
		LEM-2(32)	
		LEM-1(31)	
		LTA-8(18)	
LEM	LDW280-23320	LTA-3(13)	1 EA.

PART NO. LDW280-11045-11&-12

GAEC SCH NO. 31-2
31-4

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED —

LAST DASH NO. USED -12

GRUMMAN REL^c INFO

PRIM NO.	LE(001)		
215	MP12		RS 4.1

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/64 ±.010 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	F. CURASI 3-26-66	RELIABILITY	
LAYOUT BY	—		
CHECKED BY			
GR LDR.	J. Pasatieri 3/26		
VEH. DESIGN	[illegible] 3/28		
STRUCT.	[illegible] 3/31	PROJ ENGR	[illegible] 4-4-66
STRUCT.	Hilderman 3/31	REL GROUP	[illegible] 4-5-66
WEIGHTS	[illegible] 4-1		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
A/S - CABIN - F/F - SEPARATION TRANSDUCER

SIZE B
CODE IDENT NO. 26512
LDW280-11045
SCALE NONE
SHEET 1.00 OF 3.00

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11045-12	E	ANGLE	AL ALLOY	QQ-A-267	2024-T3511	EXTR. 22637x6½	NONE	88	
		LDW280-11045-11	E	ANGLE	AL. ALLOY	QQ-A-267	2024-T3511	EXTR. 22637x6½	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B

CODE IDENT NO. 26512

LDW280-11045

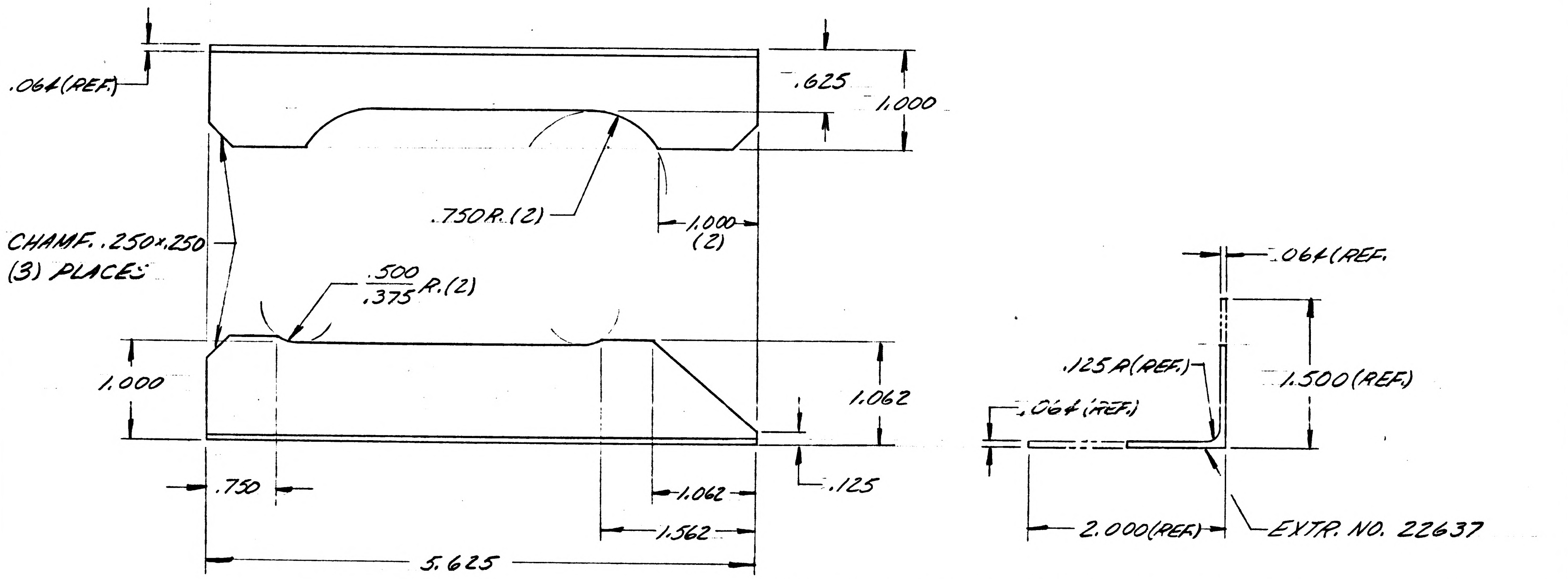
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



.064 (REF.)
.625
1.000
.750 R. (2)
1.000 (2)
CHAMF. .250 x .250 (3) PLACES
.500 / .375 R. (2)
1.000
1.062
.125
.750
1.062
1.562
5.625
.064 (REF.
.125 R (REF.)
.064 (REF.)
1.500 (REF.)
2.000 (REF.)
EXTR. NO. 22637

TO BE REDRAWN ON PRODUCTION FORMAT

LDW280-11045-11 SHN.
-12 OPP.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
SIZE B	CODE IDENT NO. 26512	LDW280-11045
SCALE FULL		SHEET 3.00

ENG 73.1 6-64

01

NAS 9-1100

24 *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280	EO NO. 296
CONTROL INFO NO. LDW280 A 0658	

*

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9 (39), LEM-10(40), LEM-11(41), LEM-12 (42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10981	A1	SEE DRAWING
-11015	B1	
-11025	B1	
-11028	B4	
-11035	A2	
-11036	B1	
-11039	A1	
-11045	A1	
-11048	B1	
-11050	C1	
P11055	B2	
P11056	C2	
-11067	B1	
-11068	B1	
H11069	B1	
-11070	C1	
-11071	A1	
-11072	A1	
-11073	A2	
P11087	B1	
-11103	A1	
-11116	A1	
-11119	B1	
-11123	A2	
-11128	C1	
-11149	A1	
-11153	A1	
-11154	A2	
-11155	A1	
-11156	B1	
-11157	B2	
LDW280-11160	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC C EO RELEASE: E 10-8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38) LEM-9(39)	
LEM		LEM-10(40) LEM-11(41) LEM-12(42)	
LEM		LEM-13(43) LEM-14(44) LEM-15(45)	

DRAWING CHANGE REQD: ✓ REVISE DWG ☐ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY	DP			—			RMS	AC
DATE	9/23/66			—	9.V		10-6-66	10-3-66

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO.: LE0280

EO NO.: 296

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 35

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER *

DWG. NO. LEO 280
EO NO. 596
CONTROL INFO NO. LDW280A-6665

IN M|B FOR *, ADD OR REMOVE ** EFF.

DWG NR	DASH NR *	# REQ'D	N/A	EFF ** REMOVE	ADD	DISPOSITION OF PARTS *	CHANGE NO
LDW280-11642 ✓	-13	1	LDW280-53161	PA-1(47)		SCRAP	A4
LDW280-11643 ✓	-3	1	LDW280-53161	PA-1(47)		SCRAP	A8
LDW280-11045 ✓	-11, -12	1 EA	LDW280-23320	LTA-3(13)		SCRAP	A2
LDW280-11035 ✓	-11	.8	LDW280-23320	LTA-3(13)		SCRAP	A3
LDW280-11333 ✓	-11, -13	1 EA	LDW280-54113		LM-12(42) TO LM-15(45)	NOT REQD	A3
LDW280-11334	-13, -15, -17	3 EA	LDW280-54113		LM-12(42) TO LM-15(45)	NOT REQD	A2
LDW280-11335	-11, -13, -15 -16, -17, -19	1 EA	LDW280-54113		LM-12(42) TO LM-15(45	NOT REQD	A1

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

3

REASON FOR EO: UPDATE DWG REQ'TS

DESCRIPTION OF EO: FOR *, ADDED OR REMOVED **

Ⓡ GAEC EO RELEASE C
JL 5-15-67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOTED	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOTED * REWORK SCRAP

APPROVED BY	JAP			FNR			DAM	Bott
DATE	5/3/67			5/3/67	5/11/67		5-9-67	5-15-67
6	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C
DRAWING TITLE: NOTED ABOVE
DRAWING NO.: LEO 280
EO NO.: 596

ISSUED BY M. SHAPIRO X1392 SECTION VDI GROUP NO. 335 PL 25

01 NAS 9-1100

LDW280-11046A

SWIP

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28322	LM-2(32)	1EA
LM	LDW280-28322	LM-1(31)	1EA
LM	LDW280-28322	LTA-8(18)	1EA

PART NO. LDW280-11046-13 & -15 — GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54113	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
LM	LDW280-54113	LM-6(36)	1

PART NO. LDW280-11046-3, — GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54113	LM-5(35)	1EA
	LDW280-54113	LM-4(34)	1EA
	LDW280-53113	LM-3(33)	1EA
	LDW280-28322	LTA-8(18)	1EA
	LDW280-28322	LM-2(32)	1EA
LM	LDW280-28322	LM-1(31)	1EA

PART NO. LDW280-11046-1, -17 & -19 — GAEC SCH NO. 325

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -21

GRUMMAN REL INFO A
PRIM NO. 215 — JK(001) — MP-16 A 6/1/[illegible]

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	E.HERCZEG 4-4-66	RELIABILITY	
LAYOUT BY	M.BRANDT MB		
CHECKED BY	[illegible] 4-6-66		
GR LEADER	[illegible] 4/6/66		
VEH DES INT	[illegible]		
STRUCTURES	[illegible] 4/7	PROJ ENGR	[illegible] 4-13
STRUCTURES	Hilderman 4/7	REL GROUP	Botti 4-15-66
WEIGHTS	Lamorte 4-13		

(R)

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHANNEL ASSY
ASCENT STAGE-MID SECTION -Z27
WATER QUANTITY MEASURING DEVICE

SIZE B — CODE IDENT NO. 26512 — LDW280-11046 — A (A)

SCALE NONE — SHEET 1.00 OF 4

REV. A DCR 6-7-66

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	APPD
											REWORK	SCRAP			
A	1	1.00,1.10, 2.00&3.00						EO A1	ON-1 NAS1097AD3(8) WAS MS20470AD3(8) ADDED SH 1.10	LM-1&-2 LTA-8	✓		R. COPPOLA 5-28-68		
	2	1.00.1.10					✓	EO A2	FOR-1,-17&-19 ADDED LM-3(33) EFF. N/A LDW280-53113 1 OF EA REQD, ADDED LM-4(34) THRU LM-15(45) EFF N/A LDW280-54113 1 OF EA REQD/VEH.	LTA-8 LM-3 THRU LM-15	NOT REQD				
	3	1.00,1.10 2.00,3.00				✓		LCD 2828 ok	RESTRICTED -1,-17&-19 TO LTA-8, LM-1 THRU LM-5. ADDED-3 ASSY & -21 CHANNEL. WCG	LM-6 THRU LM-15		✓			

FOR CONTINUATION OF REVISIONS SEE SHEET ________

ENG 77.3 5-66

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11046	A
SCALE NONE		SHEET 1.10	

01

NAS 9-1100

QTY PER ASSEMBLY -3	QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
4	4		NAS698A08	E	PLATE NUT	STD PART						
			NAS1097AD3	↑	RIVET	STD PART						
1			LDW280-11046-21		CHANNEL	AL ALLOY SH	QQ-A-250/12	7075	.032 × 4 X 5	T6	88	
			LDW280-11046-19		BRACKET	AL ALLOY SH	QQ-A-355	2024-T3	.032 × 2 1/2 × 4 3/8	NONE	88	
			-17		BRACKET	↕	↕	2024-T3	.032 × 2 5/8 × 4 3/8	NONE	↕	
			-15		ZEE			2024	.032 × 3 1/2 × 6 3/4	T3/T42		
			-13		ZEE			2024	.032 × 3 1/2 × 6 3/4	T3/T42		
	1		LDW280-11046-11		CHANNEL	AL ALLOY SH	QQ-A-355	2024-T3	.032 × 4 1/8 × 5 1/4	NONE	88	
			LDW280-11046-3	↑	CHANNEL ASSY					NONE	NONE	
			LDW280-11046-1	E	CHANNEL ASSY					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030
T42	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B | CODE IDENT NO. 26512 | LDW280-11046 | A

SCALE NONE | SHEET 2.00

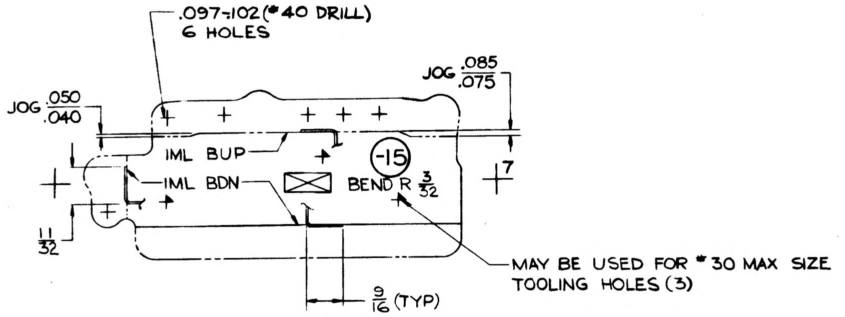
ENG 77.2 7-65

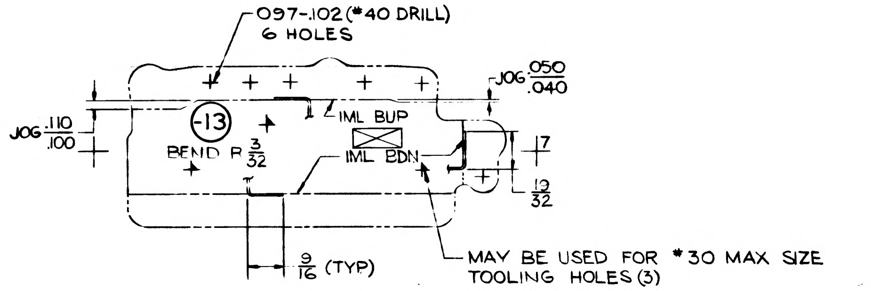
01

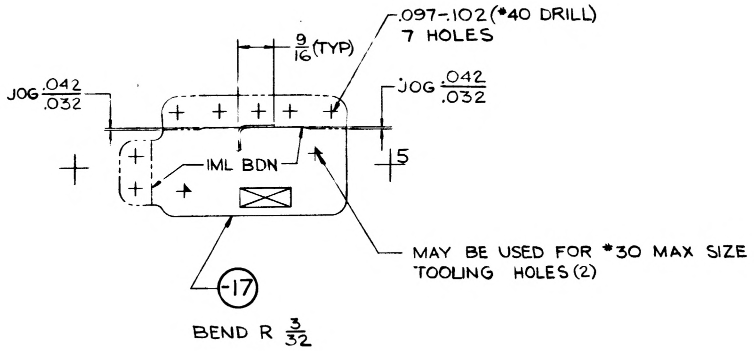
NAS 9-1100

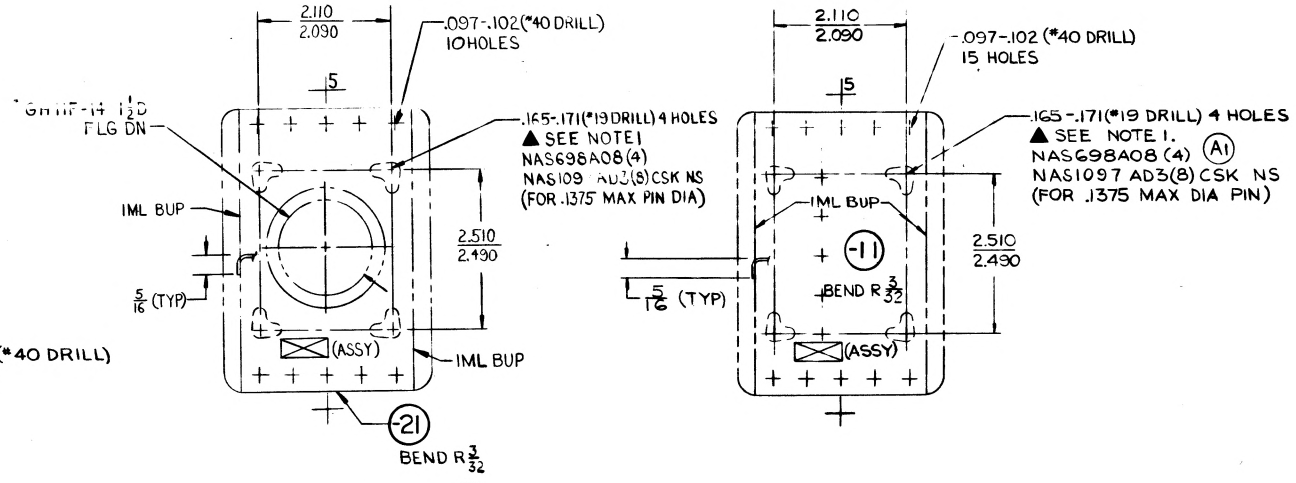
NOTES:

1. FOR HOLES MARKED ▲ SEE DRAWING LSC360-00009 FOR CORRESPONDING HOLE PATTERN.
2. NO TOOLING HOLES PERMITTED IN PARTS EXCEPT AS NOTED.


.097-.102 (#40 DRILL)
6 HOLES
JOG .085/.075
JOG .050/.040
IML BUP
IML BDN
-15
BEND R 3/32
7
11/32
MAY BE USED FOR #30 MAX SIZE TOOLING HOLES (3)
9/16 (TYP)

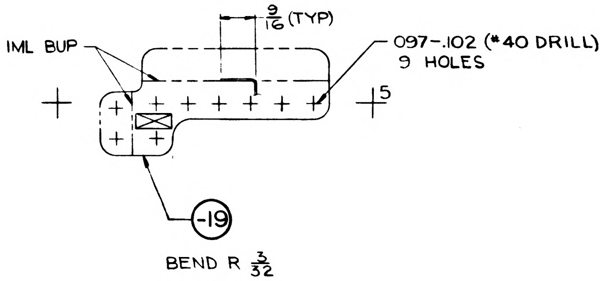

.097-.102 (#40 DRILL)
6 HOLES
JOG .050/.040
JOG .110/.100
-13
BEND R 3/32
IML BUP
IML BDN
7
13/32
9/16 (TYP)
MAY BE USED FOR #30 MAX SIZE TOOLING HOLES (3)


.097-.102 (#40 DRILL)
7 HOLES
9/16 (TYP)
JOG .042/.032
JOG .042/.032
IML BDN
5
MAY BE USED FOR #30 MAX SIZE TOOLING HOLES (2)
-17
BEND R 3/32


2.110/2.090
.097-.102 (#40 DRILL)
10HOLES
5
GH11F-14 1½D FLG DN
.165-.171 (#19 DRILL) 4 HOLES
▲ SEE NOTE1
NAS698A08 (4)
NAS109 AD3 (8) CSK NS
(FOR .1375 MAX PIN DIA)
IML BUP
2.510/2.490
5/16 (TYP)
(ASSY)
IML BUP
-21
BEND R 3/32
2.110/2.090
.097-.102 (#40 DRILL)
15 HOLES
5
.165-.171 (#19 DRILL) 4 HOLES
▲ SEE NOTE 1.
NAS698A08 (4) (A1)
NAS1097 AD3 (8) CSK NS
(FOR .1375 MAX DIA PIN)
IML BUP
-11
BEND R 3/32
2.510/2.490
5/16 (TYP)
(ASSY)

LDW280-11046-3 ASSY (A3)

LDW280-11046-1 ASSY


9/16 (TYP)
IML BUP
.097-.102 (#40 DRILL)
9 HOLES
5
-19
BEND R 3/32

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN TO .0005 MAX MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD 10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE [redacted] EDGE DISTANCE [redacted] IS 1 1/2 FASTENER DIA FROM FASTENER ℄	✓
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	✓
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32 & NOTED	✓

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	E	26512	LDW280-11046	A
	SCALE FULL			SHEET 3.00

FOR PHOTO REPRODUCTION

K2

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11046
EO NO. B1
CONTROL INFO NO. LDW280B-5185

IN M/B REVISE EFFECTIVITY OF -1 EFF. LM-1(31) THRU LM-7(37)
1EA. REQD/VEH. WAS EFF. LM-1(31) THRU LM-5(35)

RESTRICT -3 EFFECTIVITY TO LM-8(38) THRU LM-15(45)
WAS EFF. LM-6(36) THRU LM-15(45)

SWIP

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 2828 FRG#1

(5)

REASON FOR EO: AREA FWD OF -Z27 BULKHD INACCESSIBLE FOR REMOVAL OF RIVET TAILS

DESCRIPTION OF EO: RESTRICTED EFF. OF -3 TO LM-8(38) THRU LM-15(45) WAS LM-6(36) THRU LM-15(45). REVISED EFF. OF -1 TO LM-1(37) THRU LM-7(37) WAS EFF. LM-1(31) THRU LM-5(35)

GAEC EO RELEASE: JK 9/16

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-6(36)	
		LM-7(37)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK | SCRAP ✓

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY				FDE				
DATE	8/15/68			8/15/68	8-15	8/15/68	8-16-68	

PRIORITY: C
DRAWING TITLE: A/S - MID SECTION - Z27 WATER QUANTITY CHANNEL ASSY MEASURING DEVICE
DRAWING NO.: LDW280-11046
EO NO.: B1

081568
ISSUED BY G. KOURY X 84663 SECTION VDI GROUP NO. 335 PL 25

01 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11046		EO NO. B2
CONTROL INFO NO. LDW280-B-5297		

REMOVE REQUIREMENTS FOR -3

FOR -1 ADD LM-8(38) THRU LM-15(45) EFF.
N/A LDW280-54113 1REQ'D/MOD

FOR -17 & -19 ADD LM-6(36) THRU LM-15(45) EFF.
N/A LDW280-54113 1EA. REQ'D/MOD

SWIP

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 282 8A	PKG. #2

REASON FOR EO REDESIGN OF ECS EQUIP. SUPPORT	DESCRIPTION OF EO REMOVED -3, FOR -1 ADDED LM-8(38) THRU LM-15(45) EFF N/A LDW280-54113 1REQ'D/MOD, FOR -17 & -19 ADDED LM-6(36) THRU LM-15(45) EFF. N/A LDW280-54113 1EA. REQ'D/MOD.	Ⓡ GAEC C EO RELEASE

MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
	PROCURING ACTIVITY NO.	GAEC UNIT NO	SUB CONTR UNIT NO.	✓			-3	DATE	9/7/68						9/9/68	9-12-68
LM		LM-6(36)		REVISE DWG	RECORD EO	REWORK	SCRAP		V.D.I	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
		THRU		PRIORITY C	DRAWING TITLE CHANNEL ASSY.-A/S-M/S--227.00 WATER QUANTITY MEASURING DEVICE							DRAWING NO. LDW280-11046				EO NO. B2
		LM-15(45)														

9/20/68
ISSUED BY A. PROKOPETZ / F. DERESPINIS SECTION V.D.I X7033 GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11047 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28322	LTA-8(18)	1EA
LEM	LDW280-28322	LEM-2(32)	1EA
LEM	LDW280-28322	LEM-1(31)	1EA

PART NO. LDW280-11047-3, -13, -15 & 17

GAEC SCH NO. 32-5

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A

LAST SECT LTR USED

DASH NO. USED -19

GRUMMAN REL INFO A

PRIM NO. 215

LE(001) MP12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ±1/32 ±.020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO NAS9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY FITZGERALD 4-2-66

LAYOUT BY M.BRANDT

CHECKED BY D.FASS 4-5-66

GR LEADER W Phillips 4/8/66

VEH DES INT 4/8

STRUCTURES 4/8

STRUCTURES 4/8

WEIGHTS Lamont 4-13

RELIABILITY

PROJ ENGR 4-13-66

REL GROUP A. Caramanica 4-15-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHANNEL ASSY
ASCENT STAGE-MID SECTION-Z27
WATER QUANTITY MEASURING DEVICE

SIZE B

CODE IDENT NO. 26512

LDW280-11047 A

SCALE NONE

SHEET 1.00 OF 4

12-65

0 1

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00 2.00 1.10 3.00						EO A1	INFLD & B/M (ON -1) NAS1097AD3(8) WAS MS20426AD3(8) (SH 1.00 OF 4 WAS 1.00 OF 3 ADDED SH 1.10)	LEM-1,-2 LTA -8	✓		P. Como 6-8-66 LB	X	X
A	2	1.00 2.00 1.10 3.00					✓	EO A2	IN F/D & B/M DELETED -1 ASSY, ADDED -3 ASSY, DELETED -11, ADDED -19	LEM -1,-2 LTA -8		-1	P. Como 6-8-66 LB	X	X

CHG APPROVED

LTR	GROUP LDR	VDI	STRUCTURES	STRUCTURES	WEIGHTS
A					

ENG 77.16 3-66

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW 280-11047	A
SCALE NONE			SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY -3	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		NAS1097AD3	E	RIVET	STD PART						
4		NAS698A08	E	PLATE NUT	STD PART						
		LDW280-11047-17	E	CLIP	AL. ALLOY SH.	QQ-A-250/4	2024-T3	.032 x 2 1/8 x 2 1/8	NONE	88	
		LDW280-11047-15	E	CLIP	AL. ALLOY SH.	QQ-A-250/4	2024-T3	.032 x 2 1/8 x 2 1/4	NONE	88	
		LDW280-11047-15	E	CLIP	AL. ALLOY EXTR.	QQ-A-250/4	2024T3511	DIE *78K x 1 1/4	NONE	88	
1		LDW280-11047-19	E	CHANNEL	AL. ALLOY SH.	QQ-A-250/4	2024-T3	.032 x 4 3/4 x 5	NONE	88	
		LDW280-11047-3	E	CHANNEL ASSY							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

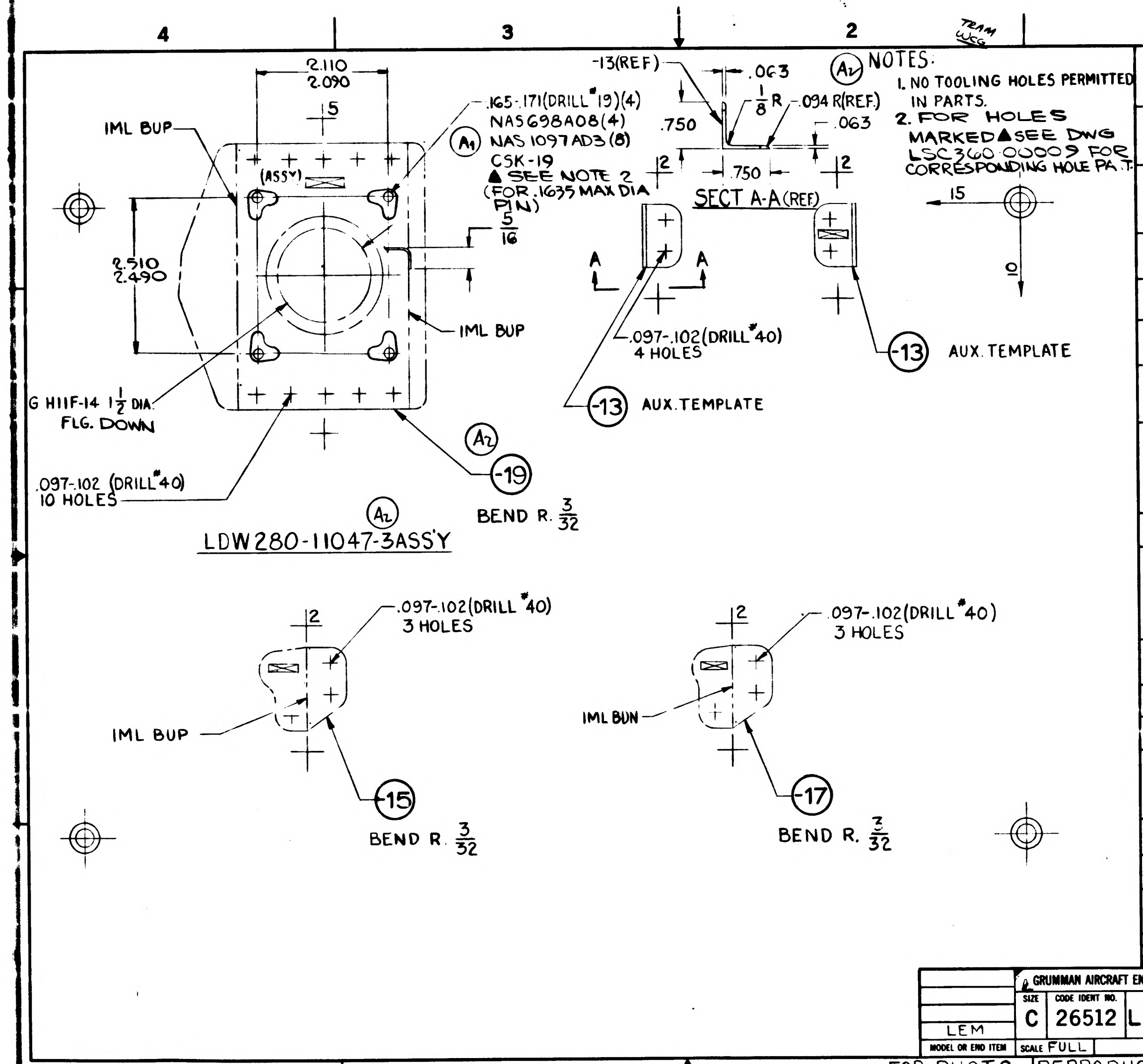
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11047	A
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


4
3
2
1
2.110
2.090
5
IML BUP
(ASSY)
.165-.171(DRILL #19)(4)
NAS698A08(4)
A1
NAS 1097AD3 (8)
CSK-19
▲ SEE NOTE 2
(FOR .1635 MAX DIA PIN)
5/16
2.510
2.490
IML BUP
G H11F-14 1 1/2 DIA. FLG. DOWN
.097-.102 (DRILL #40)
10 HOLES
A2
-19
A2
LDW280-11047-3ASS'Y
BEND R. 3/32
-13(REF)
.063
.750
1/8 R
.094 R(REF.)
.063
2
.750
2
SECT A-A (REF)
A
A
.097-.102(DRILL #40)
4 HOLES
-13
AUX. TEMPLATE
-13
AUX. TEMPLATE
15
10
2
.097-.102(DRILL #40)
3 HOLES
IML BUP
-15
BEND R. 3/32
2
.097-.102(DRILL #40)
3 HOLES
IML BUN
-17
BEND R. 3/32
TRAM
WCG

A2 NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. FOR HOLES MARKED ▲ SEE DWG LSC360-00009 FOR CORRESPONDING HOLE PAT.

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 ∇ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 ∇ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ƒ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-11047A

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	C	26512	LDW280-11047	A
	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

NAS 9-1100

LDW280-11048 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28316	LTA-8 (18)	1 EA
LEM	LDW 280-28316	LEM-2 (32)	1 EA
LEM	LDW280-28316	LEM-1 (31)	1 EA
PART NO. LDW 280-11048-11 & -13		GAEC SCH NO. 31-3	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23316	LEM-6 (36)	1 EA
↓	↓	LEM-5 (35)	↓
↓	↓	LEM-4 (34)	↓
↓	↓	LEM 3 (33)	↓
LEM	LDW 280-23316	LTA-3 (13)	1 EA
PART NO. LDW 280-11048-11, -15		GAEC SCH NO. 31-3	

TO BE REDRAWN ON PRODUCTION FORMAT 3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00			
REV	A	A	A		A			
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED

LAST DASH NO. USED -15

GRUMMAN REL INFO

PRIM NO. 215 | E/001 MP12 | RS 4-?

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
1/32 .020 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY Bonelli 3-29-66 | Reliability
LAYOUT BY Bonelli 3-29-66
CHECKED BY
GRP LDR [illegible] 3/31
VDI [illegible] 3/31
STRUCTURES Hilderman 4/1
WEIGHT [illegible] 4-4
PROJ ENGR [illegible] 4-12-66
REL GROUP Botti 4-16-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

GUSSET
ASCENT STAGE - CABIN - X213

SIZE B | CODE IDENT NO. 26512 | LDW280-11048 | A

SCALE NONE | SHEET 1 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	SH CHG LTR	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
												REWORK	SCRAP			
A	1	3.		A						ADDED DIM'S FOR LDW280-11048-11, -13, & -15 Ⓔ	L.T.A. 8, LEM 1 & 2		✓	Conwell 4-5-66	[illegible]	[illegible]

FOR CONTINUATION OF REVISIONS SEE SHEET

ENG 77.3 5-64

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-11048	A
SCALE NONE		SHEET 1.10	

01

NAS 9-1100

QTY PER ASSEMBLY								CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
									LDW280-11048-15	E	GUSSET	AL ALLOY SH.	QQ-A-355	2024-T3	.050 × 3 × 3½	NONE	88	
									LDW280-11048-13	E	GUSSET	AL ALLOY SH	QQ-A-355	2024-T3	.050 × 3 × 3½	NONE	88	
									LDW280-11048-11	E	GUSSET	AL ALLOY SH.	QQ-A-355	2024-T3	.050 × 3 × 3½	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ALODINE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11048	A

SCALE NONE

SHEET 2

ENG 77.2 7-65

01

NAS 9-1100

LDW280-11048 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23316	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
		LM-4(34)	1
		LM-3(33)	1
LM	LDW280-23316	LTA-3(13)	1
PART NO. LDW280-11048-15		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28316	LM-2(32)	1
LM	LDW280-28316	LM-1(31)	1
LM	LDW280-28316	LTA-8(18)	1
PART NO. LDW280-11048-13		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23316	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
		LM-4(34)	1
	LDW280-23316	LM-3(33)	1
	LDW280-28316	LM-2(32)	1
	LDW280-28316	LM-1(31)	1
	LDW280-28316	LTA-8(18)	1
LM	LDW280-23316	LTA-3(13)	1
PART NO. LDW280-11048-11		GAEC SCH NO. 31-3	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10		2.00		3.00				
REV	B	B		B		B				
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO B	
LAST DASH NO. USED	-15	PRIM NO. 215	EMF

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	BONNELLI 3/29/66	RELIABILITY	
LAYOUT BY	BONNELLI 3/29/66	WEIGHTS	D.ROBESCH 4/4
CHECKED BY			
GROUP LDR	J.PUSATERI 3/31		
VEH DES INT	PAULSRUD 3/31		
STRUCTURES	HILDERMAN FEB 4/1	PROJ ENGR	J.ALBER/R.M.C 4/12/66
STRUCTURES		REL GROUP	BOTTI 4/14/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

GUSSET
ASCENT STAGE ~ CABIN ~ X213

SIZE B | CODE IDENT NO. 26512 | LDW280-11048 | B
SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-11048 REV A 4/14/66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED NO CHG LAST REV A LOFTED DWG WAS DIMENSIONED DWG Collett 10/14/66						
B	1	1.00, 1.10						LE0280-2960	FOR -11 & -15 ADDED LM-7(37) THRU -15(45) EFFECTIVITY EG	NOTED	NOT	REQD	Collett 10/14/66		

CHG APPROVED LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY
B						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11048	B
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11048-15	E	GUSSET	AL ALY SH	QQ-A-250/4	2024-T3	.050×3×4	NONE	88	6B
								LDW280-11048-13	E	GUSSET	AL ALY SH	QQ-A-250/4	2024-T3	.050×3×4	NONE	88	4D
								LDW280-11048-11	E	GUSSET	AL ALY SH	QQ-A-250/4	2024-T3	.050×3×4	NONE	88	6D

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ALODINE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

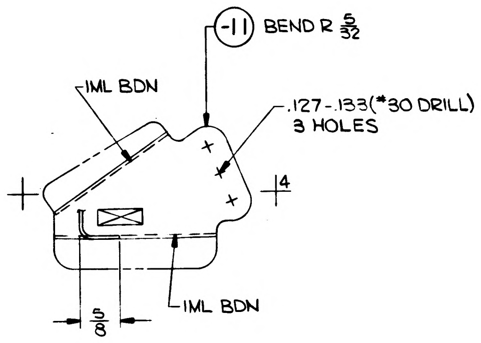
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

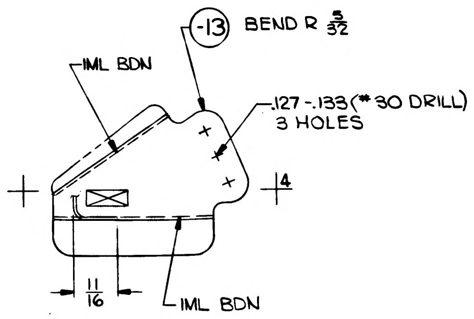
SIZE	CODE IDENT NO.		
B	26512	LDW280-11048	B
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

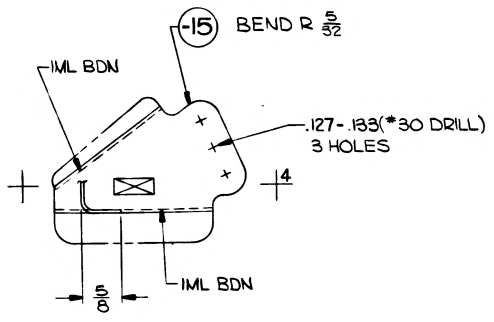
01

NAS 9-1100





NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS



MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
$\overset{125}{\sqrt{}}$ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
$\overset{200}{\sqrt{}}$ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL $\sqrt{}$ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ±1/32	✓

LDW280-11048 B

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	D	26512	LDW280-11048	B
	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

01 NAS 9-1100

24 *

ENG 33.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280
EO NO. 296
CONTROL INFO NO. LDW280 A 0658

*TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

	DRAWING NUMBER	CHANGE NUMBER	TITLE
✓	LDW280-10981	A1	SEE DRAWING
✓	-11015	B1	
✓	-11025	B1	
✓	-11028	B4	
✓	-11035	A2	
✓	-11036	B1	
✓	-11039	A1	
✓	-11045	A1	
✓	-11048	B1	
✓	-11050	C1	
✓	P11055	B2	
✓	P11056	C2	
✓	-11067	B1	
✓	-11068	B1	
✓	H11069	B1	
✓	-11070	C1	
✓	-11071	A1	
✓	-11072	A1	
✓	-11073	A2	
✓	P11087	B1	
✓	-11103	A1	
✓	-11116	A1	
✓	-11119	B1	
	-11123	A2	
	-11128	C1	
	-11149	A1	
	-11153	A1	
	-11154	A2	
	-11155	A1	
	-11156	B1	
	-11157	B2	
	LDW280-11160	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.C.

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC C EO RELEASE: Ⓡ E 10-8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM-9(39)
LEM		LEM-10(40) LEM-11(41)	LEM-12(42)
LEM		LEM-13(43) LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD: ✓ REVISE DWG / RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

PRIORITY: C

APPROVED BY	DP						PMS	AC
DATE	9/23/66					9.19	10-6-66	10-3-66
	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

DRAWING TITLE: NOTED

DRAWING NO.: LE0280

EO NO.: 296

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 35

01 NAS 9-1100

LDW280-11049 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23099	LM-3(33)	1 EA

PART NO. LDW 280-11049-17,-19

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW 280-28324	LEM-2(32)	1 EA
	-28324	LEM-1(31)	1 EA
	-28324	LTA-8(18)	1 EA
	-23099	LTA-3(13)	1 EA
LEM	LDW280-28324	LTA-1(11)	1 EA

PART NO. LDW280-11049-11,-13,-15

GAEC SCH NO. 31-1

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.

GAEC SCH NO.

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	-	GRUMMAN REL^c INFO B	
LAST DASH NO. USED	-19	PRIM NO. 215	JK (001) ME-3B-11/20/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.010 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 | LINE ITEM 1 | DOCUMENTATION TYPE II

DRAWN BY	ROCKLEIN 3/29/66		
LAYOUT BY	ROCKLEIN 3/29/66		
CHECKED BY			
GR. LEADER	R.V. PHILLIPS 3/30/66		
VEH. DES INT	W. BISCHOFF 3/30/66		
STRUCTURES	FEB BW 4/1/66	PROJ ENGR	J. ALBER RMC 4/4/66
STRUCTURES	HILDERMAN 4/1/66	REL GROUP	A. CARAMANICA 4/5/66
WEIGHTS	D. ROBESCH DJL 4/4/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHANNEL
ASCENT STAGE~MID SECTION, HEAT
EXCHANGER SWITCH

SIZE	CODE IDENT NO.		
B	26512	LDW280-11049	B

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-11049 "NO CHG" 4/5/66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHG LAST REVISION NO CHG. SH. 1 OF 4 WAS 1 OF 1. LOFTED DWG WAS DIMENSIONED	JAEGGI GB	8-17	-66			
A	1	1.00,1.10,3.00						EO A1	FOR -11, -13 & -15 ADDED LTA-3(13) & LEM-3(33) EFF.	LEM-3, LTA-3	NOT	REQD	JAEGGI 8-17-66		
B	1	1.00, 1.10, 2.00 & 3.00		G		✓		EC B1 LCD 2247	REMOVED -11, -13 & -15 EFF FROM LM-3 ADDED -17 & -19 & NOTE #1	LM-3 (33)		-13-15 & -17	P. KOCHLING 8-6-68		
	2	1.10 & 3.00				✓		EO B1 LCD 2247	REF EO B1 -19 F/D ADDED 13/16 DIM.	LM-3 (33)	✓				
	3	1.10 & 3.00					✓	EO B3	REF EO B1 IN FLD ON-17 REVISED TRIM ADDED DIM 3/8 & 1/32	LM-3 (33)	✓				
	4	1.10				✓		LEO 280-854 LCD 2508 CCA 858	CANCELLED BY LEO 280-896	LTA-8	NOT	REQD			
	5	1.10				✓		LEO 280-896 LCD 2508 CCA 858	CANCELS CHANGE ON LEO 854						

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11049	B
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11049-19	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-0	.040 × 2 × 3	T42	88	
		LDW280-11049-17	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-0	.040 × 7 × 7	T42	88	
		LDW280-11049-15	E	CHANNEL	AL ALLOY SH	QQ-A-250/4	2024-T3	.020 × 2¼ × 4¼	NONE	88	
		LDW280-11049-13	E	CLIP	AL ALLOY SH	QQ-A-250/4	2024-T3	.032 × 2¼ × 4⅜	NONE	88	
		LDW280-11049-11	E	CHANNEL	AL ALLOY SH	QQ-A-250/4	2024-T3	.032 × 4⅛ × 7⅝	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030
T42	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11049	B

SCALE NONE SHEET 2.00

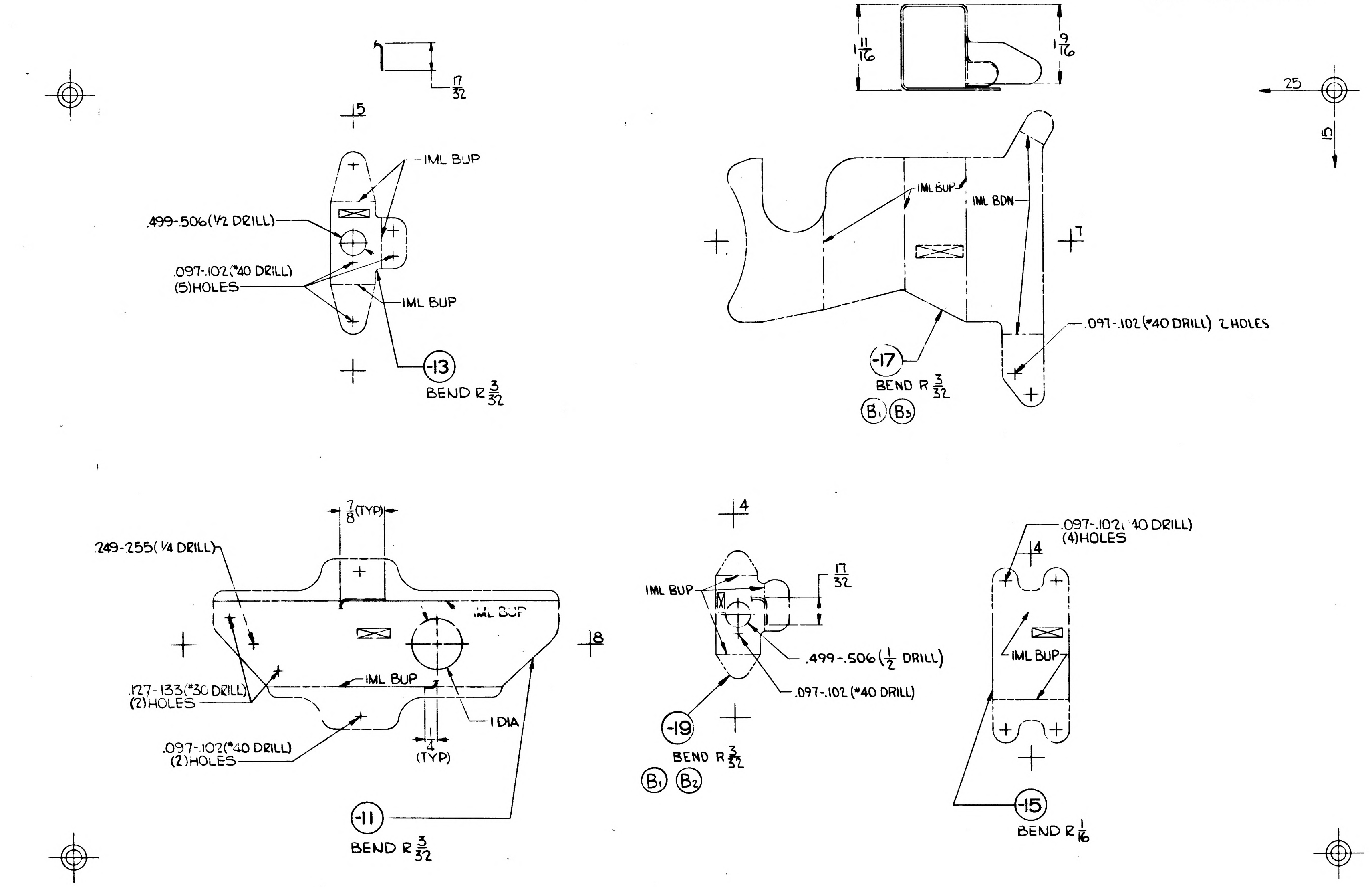
ENG 77.2 7-65

01

NAS 9-1100

TK 9M

NOTE:
1. CREW HAZARD PARTS REQUIRE SPECIAL HANDLING TO INSURE REMOVAL OF ALL SHARP EDGES + BURRS.


17/32
15
IML BUP
.499-.506(1/2 DRILL)
.097-.102(#40 DRILL)
(5)HOLES
IML BUP
-13
BEND R 3/32
1 11/16
1 9/16
25
15
IML BUP
IML BDN
7
.097-.102(#40 DRILL) 2 HOLES
-17
BEND R 3/32
B1
B3
7/8(TYP)
.249-.255(1/4 DRILL)
IML BUP
8
.127-.133(#30 DRILL)
(2)HOLES
IML BUP
.097-.102(#40 DRILL)
(2)HOLES
1/4
(TYP)
1 DIA
-11
BEND R 3/32
4
IML BUP
17/32
.499-.506(1/2 DRILL)
.097-.102 (#40 DRILL)
-19
BEND R 3/32
B1
B2
.097-.102(#40 DRILL)
(4)HOLES
4
IML BUP
-15
BEND R 1/16

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL f DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-11049	B
	SCALE FULL		SHEET 3.00	

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104

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11050-19	E	RING	AL ALLOY SH	QQ-A-250/12	7075-T6	.036 × 1 1/4 × 7 7/8	NONE	NONE	
		-17	↕	↕	↕	↕	↕	.032 × 1 1/8 × 3 1/2	↕	↕	
		-15	↕	↕	↕	↕	↕	.032 × 1 1/8 × 10	↕	↕	
		LDW280-11050-11	E	RING	AL ALLOY SH	QQ-A-250/12	7075-T6	.036 × 1 1/4 × 12 1/2	NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11050	A

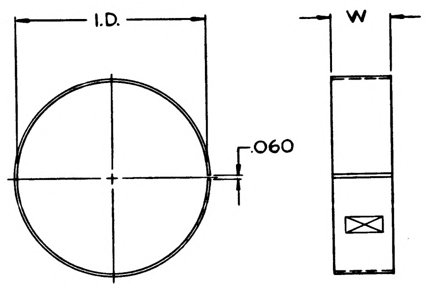
SCALE NONE SHEET 2.00

ENG 77.2 7-65

1 01 NAS 9-1100

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

RUBBER STAMP PART NUMBER
AND ALL OTHER MARKINGS
IN REGION MARKED ☒ ✓



LDW280-11050-	I.D.	W
-11	3.875-3.880	1
-15	3.020-3.025	7/8
-17	1.007-1.012	7/8
-19	2.381-2.386	1

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM LEM	SIZE C	CODE IDENT NO. 26512	LDW280-11050 A
SCALE NONE			SHEET 3.00

LDW280-11050 A

NAS 9-1100

LDW280-11050 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280P11056	TM-2/AR	2 EA.
LEM	LDW280P11056	QUAL TEST RIG (72)	1 EA
		LEM-6(36)	2 EA
		LEM-5(35)	2 EA
		LEM-4(34)	2 EA
		LEM-3(33)	2 EA
		LEM-2(32)	2 EA
		LEM-1(31)	2 EA
		LTA-8(18)	2 EA
LEM	LDW280P11056	LTA-3(13)	2 EA
PART NO. LDW280-11050-15,-17		GAEC SCH NO. 32-3	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280P11057	TM-2/AR	1 EA.
LEM	LDW280P11057	QUAL TEST RIG (72)	1 EA
		LEM-6(36)	1 EA
		LEM-5(35)	1 EA
		LEM-4(34)	1 EA
		LEM-3(33)	1 EA
		LEM-2(32)	1 EA
		LEM-1(31)	1 EA
		LTA-8(18)	1 EA
LEM	LDW280P11057	LTA-3(13)	1 EA
PART NO. LDW280-11050-11,-19		GAEC SCH NO. 32-3	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10		2.00	3.00				
REV	B	B		A	A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A/B
LAST DASH NO. USED	-19	PRIM NO. 215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.030 ±1/2

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 | LINE ITEM I | DOCUMENTATION TYPE II

DRAWN BY	FISCH	4·8·66	RELIABILITY	
LAYOUT BY	FISCH			
CHECKED BY				
GRP LDR	PHILIPS	4·8·66		
VEH DES INT	BISCHOFF	4·8·66		
STRUCT	HILDERMAN	4·8·66	PROJ ENGR	
STRUCT	BUNCE	4·8·66	REL GROUP	
WEIGHTS	ROBESCH	4·11·66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

RING
ASCENT STAGE - MID SECTION
S-BAND STEERABLE ANT.- CONE REINF

SIZE	CODE IDENT NO.		
B	26512	LDW280-11050	B
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

SUPERSEDES LDW280-11050 "NC" 4·8·66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
				RETRACED NO CHG LAST REV					NC SH 1 OF 3 WAS 1 OF 1 ADDED SH 1.10, 2.00 & 3.00	J.PAPILE		7-3-66			
A	1	1.00 1.10						LE0280-103	ADDED EFFECTIVITY FOR VENDOR QUAL TEST RIG (72)	NOTED	NOT	REQD	PAPILE 7-3-66 J.B.		
	2	1.00 1.10 2.00 & 3.00						EO A2	ADDED -19, REMOVED -13	NOTED		-13			
B	1	1.1.10					✓	LE0280-193	ADDED TM-2/AR FOR ALL DASH NO'S.	TM-2/AR	NOT	REQD	FOSTER 8-25-66		

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCT	STRUCT	WEIGHTS	RELIABILITY
A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11050	B
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

24 *

ENG 20.2 REV 2-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280
EO NO. 296
CONTROL INFO NO. LDW280 A 0658

*

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

	DRAWING NUMBER	CHANGE NUMBER	TITLE
✓	LDW280-10381	A1	SEE DRAWING
✓	-11015	B1	
✓	-11025	B1	
✓	-11028	B4	
✓	-11035	A2	
✓	-11036	B1	
✓	-11039	A1	
✓	-11045	A1	
✓	-11048	B1	
✓	-11050	C1	
✓	P11055	B2	
✓	P11056	C2	
✓	-11067	B1	
✓	-11068	B1	
✓	H11069	B1	
✓	-11070	C1	
✓	-11071	A1	
✓	-11072	A1	
✓	-11073	A2	
✓	P11087	B1	
✓	-11103	A1	
✓	-11116	A1	
	-11119	B1	
	-11123	A2	
	-11128	C1	
	-11149	A1	
	-11153	A1	
	-11154	A2	
	-11155	A1	
	-11156	B1	
	-11157	B2	
	LDW280-11160	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE: 6 10-6

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM-9(39)
LEM		LEM-10(40) LEM-11(41)	LEM-12(42)
LEM		LEM-13(43) LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

	V.D.I	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY	RP			—	hw		EMS	AC
DATE	9/23/66			—	9.29		10-6-66	10-3-66

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO: LE0280
EO NO. 296

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 3

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER *

DWG. NO. LDW280-11050
EO NO. C2
CONTROL INFO NO. LDW280A-9245

IN M/B ON -11 & -19 REMOVE LM-4(34) THRU LM-15(45), N/A: LDW280P11057 (1/VEH.)

ADD -21 SAME AS -11 EXCEPT MATERIAL } STAINLESS STL, MIL-S-5059
ADD -23 SAME AS -19 EXCEPT MATERIAL } 301, 1/2 HARD
EFFECT: LM-4 (34) THRU LM-15(45), N/A: LDW280P11057 (1 EA./VEH.)
QUAL TEST (70) (1 EA.)

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG / LCD 1809 CCA 632 3

REASON FOR EO: ANTENNA ROTATION 45°

DESCRIPTION OF EO: REMOVED -11 & -19 ADDED -21 & -23.

GAEC EO RELEASE: K 10/9/67

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-4(34)	
LM		THRU LM-15(45)	
LM		QUAL.TEST(70)	

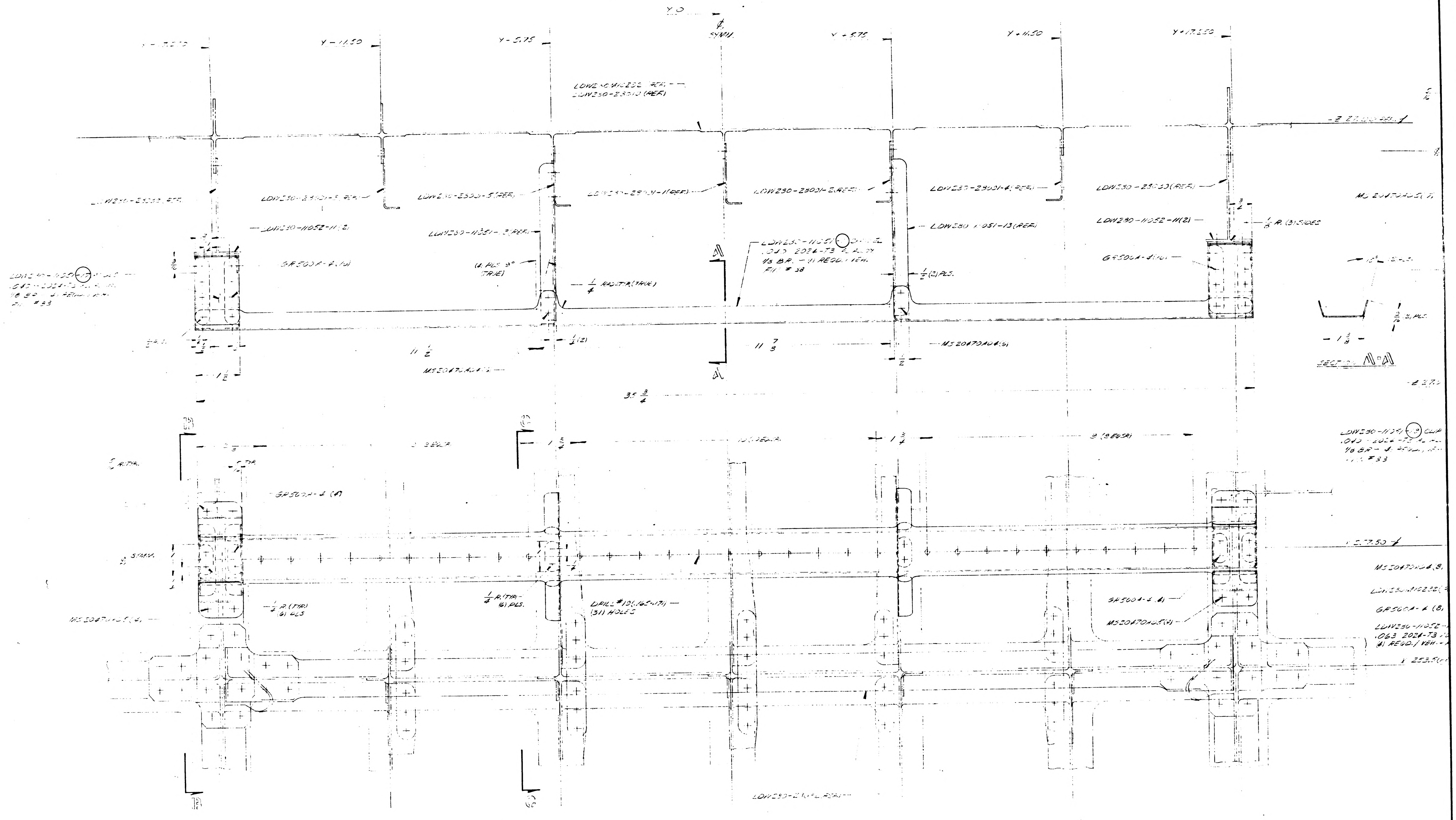
DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
✓			-11, -19	9/21/67 C	V.D.I.			9-21-67	9.23		9/23/67	7/67

PRIORITY: C
DRAWING TITLE: RING ASCENT STAGE ~ MID SECT. ~ S-BAND STEER. ANT. ~ CONE REINF
DRAWING NO. LDW280-11050
EO NO. C2

10/6
ISSUED BY W. PAIUK X7033 SECTION VEH. DES. INT. GROUP NO. 335 PL 25

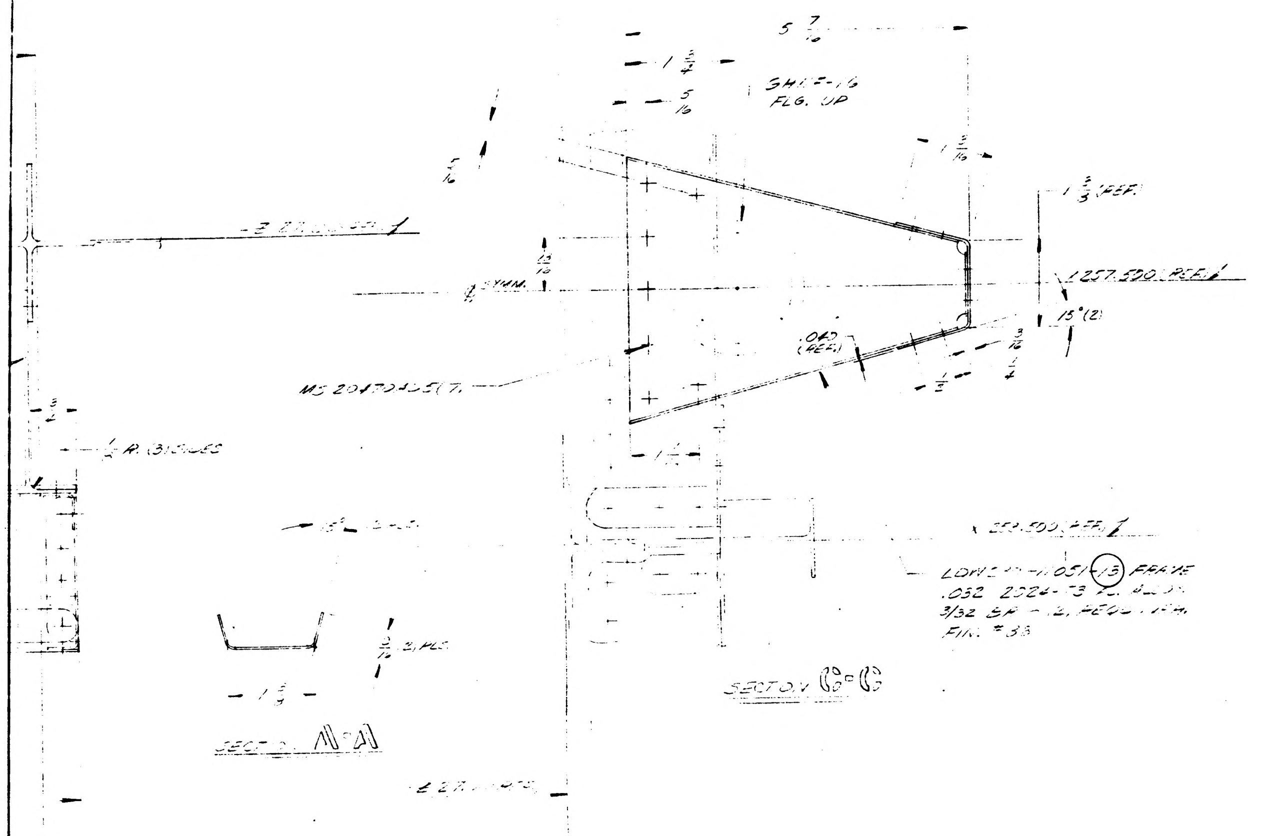
01

NAS 9-1100


Y O
℄ SYMM.
Y − 17.550
Y − 11.50
Y − 5.75
Y + 5.75
Y + 11.50
Y + 17.550
LDW230-28012 (REF.)
LDW230-28010 (REF.)
LDW230-28033 (REF.)
LDW230-28031-3 (REF.)
LDW230-28031-5 (REF.)
LDW230-28031-1 (REF.)
LDW230-28031-2 (REF.)
LDW230-28031-4 (REF.)
LDW230-28033 (REF.)
LDW230-11052-11 (2)
LDW230-11051-13 (REF.)
LDW230-11052-11 (2)
LDW230-11051-13 (REF.)
1/8 R. (3) SIDES
LDW230-11051-17 ANGLE
.040 2024-T3 AL ALLOY
1/8 BR. — (4) REQD./VEH.
FIN. #33
GR500A-4 (10)
GR500A-4 (16)
(4) PLS. 9° (TRUE)
1/4 RADIUS (TRUE)
LDW230-11051 CHANNEL
.040 2024-T3 AL ALLOY
1/8 BR. — (1) REQD./VEH.
FIN. #38
1/2 (2) PLS.
1/2 (2)
11 1/2
11 7/8
MS20470AD4 (6)
MS20470AD4 (6)
1 1/2
1/2
3/16
35 3/4
A
A
SECTION A-A
1 5/8
3/16 (2) PLS.
15°
MS20470AD5 (7)
Z 27.00
Z 27.50
B
B
C
C
5/16 R. TYP.
5/16 TYP.
2 3/8
3 (3 EQSP.)
1 3/4
10 (10 EQSP.)
3 (9 EQSP.)
℄ SYMM.
GR500A-4 (4)
1/4 R. (TYP.) (6) PLS
1/4 R. (TYP.) (6) PLS.
DRILL #19 (.165-.171) (31) HOLES
MS20470AD5 (4)
GR500A-4 (4)
MS20470AD5 (4)
LDW230-11051-13 CLIP
.040 2024-T3 AL ALLOY
1/8 BR. — 4 REQD./VEH.
FIN. #33
MS20470AD4 (8)
LDW230-10232 (
GR500A-4 (8)
LDW230-11052-
.063 2024-T3
(4) REQD./VEH.
X 253.5
LDW230-28012 REF.

LDW230-28339-1 INSTALL.
VIEW LOOKING FWD.
FULL SCALE

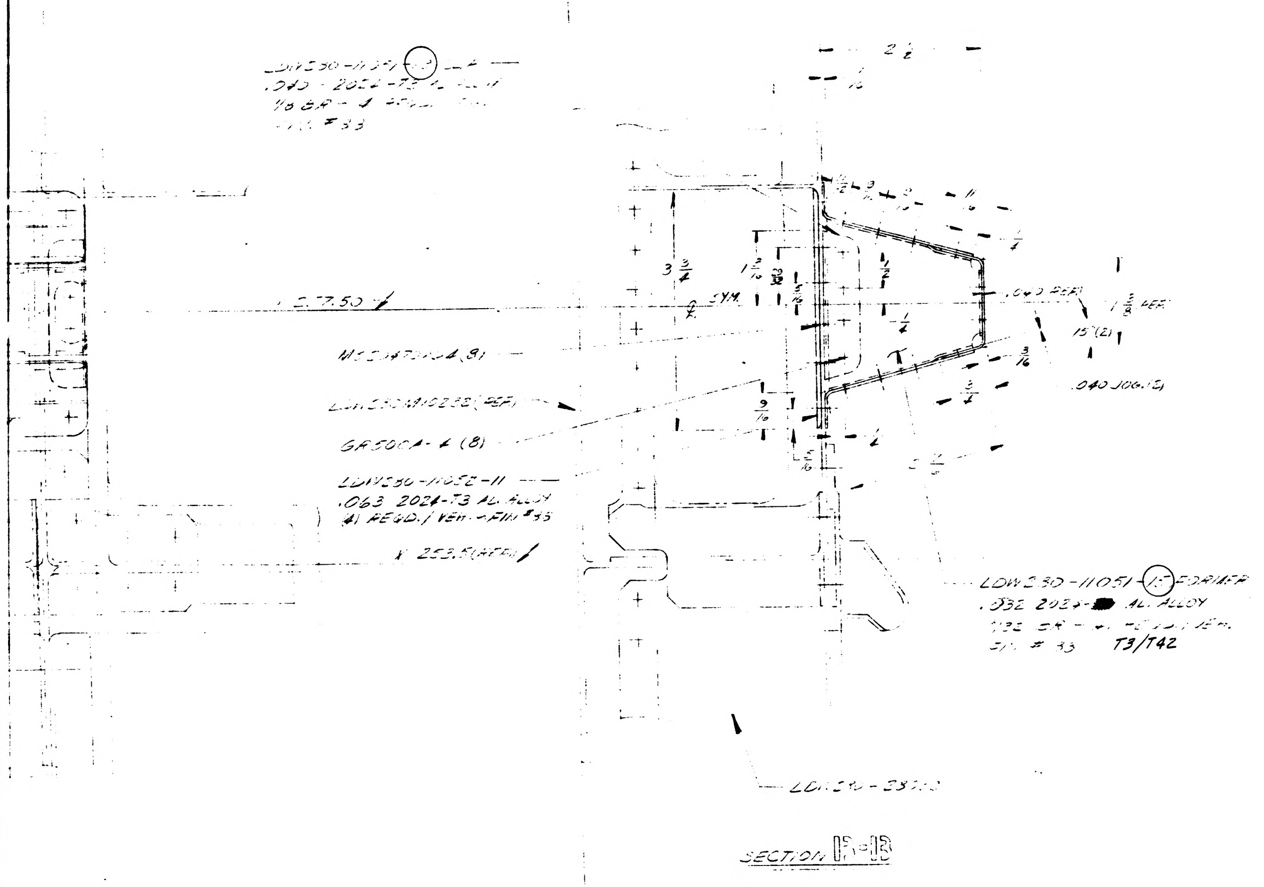
01/02 NAS 9-1100



5 7/16
1 3/4
5/16
SHIFE-16
FLG. UP
1 3/16
1 3/8 (REF.)
13/16
℄ SYMM.
X 1257.500 (REF.)
15°(2)
.040 (REF.)
3/16
1/4
1/2
MS 20470AD5(7)
1 1/4
X 258.500 (REF.)
LDW280-11051-(13) FRAME
.032 2024-T3 AL. ALLOY
3/32 SP - (2) REQD/ MOD.
FIN. #33
3/16 (2) PLS.
1 3/8

SECTION C-C

SECTION A-A



2 1/2
LDW280-11051-
.040 - 2024-T3 AL. ALLOY
1/8 SP - 4 REQD.
FIN. #33
X 277.50
3 3/4
℄ SYM.
1 3/16
29/32
5/16
1/2
1/4
9/16
.040 REF.
1 3/8 REF.
15°(2)
.040 JOG.(2)
3/16
3/4
MS20470AD4(8)
LDW280-28323 (REF.)
GR500A-4 (8)
LDW280-11052-11
.063 2024-T3 AL. ALLOY
(1) REQD./ VEH. - FIN #33
X 253.5 (REF.)
LDW280-11051-(15) FORMER
.032 2024- AL. ALLOY
3/32 SP - (4) REQD./ VEH.
FIN. # 33
T3/T42
LDW280-28323

SECTION B-B

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	~~G. S. S.~~ LSP14-9010	
86	ANODIZE	~~G. S. S.~~ LSP14-9030	

RECORD E. O.'s		
MODEL	E O NUMBER	MODULE NO.

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

MANUFACTURING OPERATIONS	
NOTES CHECKED - APPLY TO THIS DWG.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.	
200√ FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
INSPECTION INFORMATION MINIMUM PERMISSIBLE ~~AVERAGE~~ EDGE DISTANCE ~~MARKED~~ IS 1 1/2 FASTENER DIA.	✓
SYMBOL ƒ DENOTES SURFACE TO BE MACHINED	✓
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓

REVISIONS														
REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION					DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MODULE NUMBER	DISPOSITION OF EXIST PARTS		ENGRG APPD	GOVT APPD
			GRUMMAN INFO ONLY DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER				RE-WORK	SCRAP		

NOTES:

1. ALL INFORMATION PERTAINING TO THE FOLLOWING DWGS. IS FOR REF. PURPOSES ONLY;
   LDW280-28329
   ~~LDW280-11051~~
   LDW280-11052
2. THE NEXT ASSY. (SEE F/D FOR NUMBER REQD./MOD.)
   FOR LDW280-28329 ON LTA-3 (13), LEM-1 (31), LEM-2 (32) } LDW280-28019
   FOR LDW280-11051 ON LTA-3 (13), LEM-1 (31), LEM-2 (32) } LDW280-28329
   FOR LDW280-11052 ON LTA-3 (13), LEM-1 (31), LEM-2 (32) } LDW280-28329
3. ALL PARTS I & T EXEMPT
4. NO TOOLING HOLES IN PARTS
5. ALL 2024 ALL ALLOY PARTS PER GOVT SPEC QQ-A-355

02/02 NAS 9-1100

QTY REQ'D PER ASSY			PART OR IDENTIFYING NO.	I & T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE

				LEM	NOTED		NOTED
MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE	MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
PART NO.		GRUMMAN SCH INFO		PART NO.		GRUMMAN SCH INFO 325	

TO BE REDRAWN ON PRODUCTION FORMAT

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES	DRAWN BY		
	CHECKED BY		
	LAYOUT BY	—	
± 1/32 ± .010 ± 1/2°	GP. LDR.		3/31
ORIG DWG AUTH	IDT		
DETAIL SPEC REQUIREMENT			
CLASS II ENGRG CHANGE	WEIGHTS		
CLASS I ENGRG CHANGE			
	PROJ. ENG		
GRUMMAN REL-INFO			
PRIM. NO.			
215	RELEASE		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

CHANNEL ~ ASCENT STAGE
MID-SECT. ~ -227 WIRING SUPT.

CONTRACT NO. NAS 9-1100 DOCUMENTATION TYPE II

CODE IDENT NO.	SIZE	
26512	J	LDW280-11051

SCALE FULL LINE ITEM I SHEET 1 OF 1

X6656

LDW280-11054

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28330	LEM-3(33)	1
↑	↑	LEM-2(32)	↑
↓	↓	LEM-1(31)	↓
LEM	LDW280-28330	LTA-8(18)	1
PART NO. LDW280-11054-11		GAEC SCH NO. 31-1	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL^C INFO			
LAST DASH NO. USED	-11	PRIM NO. 215			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.010 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	BRANDT 3-31-66	RELIABILITY	
LAYOUT BY			
CHECKED BY	CNB		
GR. LDR.	R.V. PHILLIPS		
V.D.I.	BISCHOFF		
STRUCTURES	FEB BW	PROJ ENGR	ALBER /rc 4-4
STRUCTURES	HILDERMAN	REL GROUP	CARAMANICA 4-L
WEIGHTS	ROBESCH		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TEE
ASCENT ~ MIDSECTION ~ -Y17.25
POWER DIVIDER , C-BAND

SIZE B
CODE IDENT NO. 26512
LDW280-11054
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
RETRACED NO CHANGE, LAST REVISION NO CHANGE., SH. I OF 4 WAS SH. I OF I., JOE CARLINO															

CHG APPROVED

LTR	GROUP LDR									

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11054

SCALE NONE

SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11054-11	E	TEE	AL. ALLOY EXT.	QQ-A-267	2024-T3511	EXT. DIE # 2499×1½	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11054

SCALE NONE

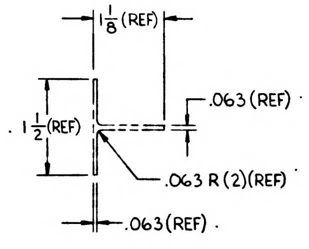
SHEET 2.00

ENG 77.2 7-65

01

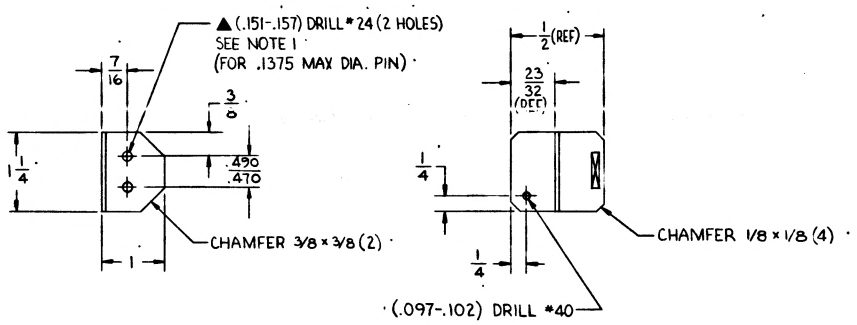
NAS 9-1100

NOTES:
1. FOR HOLES MARKED ▲ SEE DWG LSC380-00143 FOR CORRESPONDING HOLE PATTERN.



1 1/8 (REF)
.063 (REF)
1 1/2 (REF)
.063 R (2)(REF)
.063 (REF)

DIE EXT # 2499



▲ (.151-.157) DRILL # 24 (2 HOLES)
SEE NOTE 1
(FOR .1375 MAX DIA. PIN)
7/16
3/8
1 1/4
.490
.470
CHAMFER 3/8 × 3/8 (2)
1
1/2 (REF)
23/32 (REF)
1/4
1/4
CHAMFER 1/8 × 1/8 (4)
(.097-.102) DRILL #40

LDW280-11054-11

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LEM	C	26512	LDW280-11054
	SCALE FULL		SHEET 3.00

LDW280-11054

LDW280-11054

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED NO CHANGE-LAST REV. NO CHANGE, SH 1 OF 4 WAS SH 1 OF 1, LOFTED DWG WAS DIMENSIONED DWG — A. MONTEMAGNO 7-25-66						
A	1	3.00, 2.00 1.10	5D 7C				✓	EO A1	ON-1 ASSY ADDED DRILL # 19, NAS 682-A08 (1) MS 20426 AD3 (2) & REMOVED MS 20470 AD4 (1)	NOTED	✓		A. MONTEMAGNO 7-25-66		
	2	1.00 1.10					✓	EO A2	ADDED QUAL TEST (72) REQUIREMENTS TO -1		NOT REQD				
	3	1.00, 2.00 3.00, 1.10					✓		REF EO A1: EO NOT APPLICABLE. IN FIELD, B/M & MODEL BLOCK ADDED -3 ASSY	NOTED	✓			RVP 9/10/66	
	4	1.10, 2.00 3.00	5D 4F				✓		IN FIELD OF DWG. ADDED DIMENSION $\frac{2.255}{2.245}$ (TYP) WAS $1.250^{\pm .005}$ (TYP) IN B/M ADDED HEAT TREAT -T3/T42 FOR -13, WAS 2024-T3 CLAD. FOR -11 REMOVED HEAT TREAT, WAS T/42. FOR -11 ADDED 2024-T3 CLAD WAS 2024-0 CLAD. IN F/D REMOVED 4 HOLES FROM -11	NOTED		-11			9-21-66
	5	1.00, 1.10, 2.00 & 3.00	3A						Ⓡ IN FLD OF DWG & B/M ADDED -5 ASSY. IN MOD BLOCK FOR -13, ADDED LEM-3 THRU -15 EFF & ALSO ADDED NOTE 4	LEM-3 THRU -15	NOT	REQD	DAGOSTO 9-2-66 RMS		
B	1	1.00, 1.10						EO B1	ADDED QUAL TEST (72) REQUIREMENTS TO -13	QUAL TEST (72)	NOT	REQD	C. BAIS 3-15-67		
	2	1.10, 2.00, 3.00						EO B2	IN FIELD & B/M REIDENTIFY -11 DETAIL PARTS MADE PER A4 CHG TO -19	LM-1, 2, 3, LTA-8, QUAL TEST (72)	NOT	REQD			
	3	1.00, 1.10						EO B3	IN M/B ADDED LM-4 (34) THRU LM-15 (45) EFF FOR N/A LDW280-28300 1 EA REQD PER MOD.	LM-4 THRU LM-15	NOT	REQD			
	4	1.10						EO B4	(REF EO B3) "IN M/B FOR -1 & -19"... WAS "IN M/B FOR -1 & -11"...	LM-1 THRU LM3, LTA-8, QUAL TEST (72)					
	5	1.00, 1.10						EO B5	ADDED "QUAL TEST (70) 2 REQD TO EFF BLOCK FOR -5	QUAL TEST (70)					

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY
A	—	R. Phillips				
B	~	R.V. Phillips 3-23				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11059	B
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28300	LM-15(45)	1
		THRU	
LM	LDW280-28300	LM-6(36)	1
LM	LDW280-28300	LM-2(32)	1
LM	LDW280-53859	LM-15(45)	1
		THRU	
LM	LDW280-53859	LM-6(36	1
PART NO. LDW280-11059-21			
LM		QUALTEST(72)	1
LM	LDW280-28300	LTA-8(18)	1
LM	LDW280-28300	LM-2(32)	1
LM	LDW280-28300	LM-1(31)	1
PART NO. LDW280-11059-3		✓	
LM		QUALTEST(72)	1
LM	LDW280-53859	LM-5(35)	1
LM	LDW280-53859	LM-4(34)	1
LM	LDW280-53859	LM-3(33)	1
PART NO. LDW280-11059-13		GAEC SCH NO. 32	

LDW280-11059 C

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53859	LM-2(32)	1
LM		QUAL TEST(72)	2
	LDW280-53859	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
		LM-4(34)	1
LM	LDW280-53859	LM-3(33)	1
PART NO. LDW280-11059-5		GAEC SCH NO. 32	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53859	LM-15(45)	1
		THRU	
LM	LDW280-53859	LM-6(36)	1
LM	LDW280-28300	LM-15(45)	1
		THRU	
LM	LDW280-28300	LM-6(36)	1
LM	LDW280-28300	LM-2(32)	1
PART NO. LDW280-11059-23			
LM		QUAL TEST(72)	1
	LDW280-28300	LM-15(45)	
		LM-14(44)	
		LM-13(43)	
		LM-12(42)	
		LM-11(41)	
		LM-10(40)	
		LM-9(39)	
		LM-8(38)	
		LM-7(37)	
		LM-6(36)	
		LM-5(35)	
		LM-4(34)	
		LM-3(33)	
		LM-2(32)	
		LM-1(31)	
LM	LDW280-28300	LTA-8(18)	1
PART NO. LDW280-11059-1		GAEC SCH NO. 32	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	1.11	2.00	3.00				
REV	C	B	C	C	C				
SHEET			1.12						
REV			C						
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -23

GRUMMAN REL^C INFO C

PRIM NO. JK (001)

215 ME-16C-12/22/

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE. UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ± 1/32 ± .020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM * 1

DOCUMENTATION TYPE II

DRAWN BY	J.J. LEONARD 4/4/66	RELIABILITY	
LAYOUT BY	J.J. LEONARD 4/4/66		
CHECKED BY			
GR LEADER	W. PHILLIPS 4/4/66		
VEH DES INT	W. BISCHOFF 4/4/66		
STRUCTURES	J. VISCONTI / F. BUNCE 4/6/66	PROJ ENGR	J. ALBER 4/8/66
STRUCTURES	R. HILDERMAN 4/6/66	REL GROUP	A. CARAMANICA 4/9/66
WEIGHTS	D. ROBESCH 4/8/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE- MID. SECT. - Z27 FUSE SUPPORT

SIZE B | CODE IDENT NO. 26512 | LDW280-11059 | C

SCALE NONE | SHEET 1.00 OF 6

77.1 12-65

SUPERSEDES LDW280-11059 NO CHANGE 4-9-66

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET 1.12

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
B	6	1.00, 1.11						LE0280-466	ADDED SHEET 1.11 FOR -1 & -3 ADD EFFECTIVITY LM-4 THRU LM-15 N/A LDW280-28300 (PREV ADDED PER EO B3 FOR -1)	LM-4 THRU LM-15	NOT	REQD	BAIS 3-15-67		
	7	1.11							REF EO B4: EFF SHOULD INCLUDE LM-4 THRU LM-15	LTA-8 LM-1 THRU LM-15 QUALTEST (72)	NOT	REQD			
	8	1.11							REF EO B5: QUAL TEST (72) WAS QUAL TEST (70)	QUAL TEST (72)					
C	1	1.00				✓		EOC1 LCD#1752	FOR -5 AND -13 ADDED LM-2 (32) EFFECTIVITY	LM-2(32)	NOT	REQD	D. STELLABOTTE 11-26-68		
	2	1.00, 2.00 3.00					✓	EOC2	IN FLD TRIMMED -13 IN FLD, B/M & M/B CREATED -21	LM-2(32) THRU LM-15(45)	✓				
	3	1.00					✓	EOC3	REF EO: C2 ON -21 REMOVED LM-3 THRU LM-15 REQUIREMENTS	LM-3(33) THRU LM-15(45)		-21			
	4	1.00, 2.00, 3.00					✓	EOC4	REF EO: C2 CREATED -23, -23 MAYBE MADE BY RWK'G -13.	LM-2(32)	✓				
	5	1.00					✓	EOC5	IN FLD, B/M, & MOD. BLK RESTRICTED -13 & REMOVED -21 FOR LM-3 THRU LM-5, REMOVED -21 ON N/A LDW 280-53859 FOR LM-2; ADDED -21 LM-6 THRU LM-15 ON N/A LDW280-53859, ADDED -23 FOR LM-6 THRU LM-15 -13 MAY BE REWORKED TO -23	LM-2(32) THRU LM-15(45)	✓				
	6	2.00, 3.00					✓	EOC6	ON -3 ASSY IN FLD & B/M NAS696A08(1) WAS NAS682A08(1)	LM-9(39) THRU LM-15(45)	✓				
	7	1.00					✓	EOC7	FOR -3, REMOVED LM-3 THRU LM-15 EFFECTIVITY	LM-3(31) THRU LM-15(45		-3	E.C.G.		

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY					
B	–	7-23		3/27							
C											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11059	C

SCALE NONE

SHEET 1.11

ENG 77.16 3-66

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
C	8			Ⓡ			✓		REF EO C5: ON-13 FOR LM-2, LM-6 THRU LM-15 REMOVE N/A LDW280-28300 S/B N/A LDW280-53859. ADDED SH. 1.12 E.C.G.	LM-2 THRU LM-15	✓ 12-23-68		STELLA 11-26-68	11-27-68	

CHG APPROVED	LTR	GROUP LDR	VDI	STRUCT	STRUCT	WEIGHTS	RELIABILITY
	C	12/6/68	12/9/68		11/19/68		

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11059	C
SCALE NONE			SHEET 1.12

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
-5	-3	-1											
				LDW280-11059-23	E	STIFFENER	AL ALLOY SH	QQ-A-250/5	2024-O CLAD	.032 × 4 × 6	T3/T42	88	7B
				MS20426AD3	E	RIVET	STD PART						
	1			NAS682-A08		PLATE NUT	STD PART						
4		8		NAS682-A06		PLATE NUT	STD PART						
				LDW280-11059-21		CLIP	AL ALLOY SH	QQ-A-250/4	2024-T3	.032 × 1 × 2	NONE	88	4A
		1		LDW280-11059-19		BRACKET	AL ALLOY SH	QQ-A-250/5	2024-T3 CLAD	.032 × 8 7/8 × 12		88	4F
1				LDW280-11059-15		BRACKET	AL ALLOY SH	QQ-A-250/5	2024-T3 CLAD	.032 × 7 × 9 5/8	NONE	88	3D
	1			LDW280-11059-13		STIFFENER	AL ALLOY SH	QQ-A-250/5	2024-O CLAD	.032 × 3 3/4 × 5 5/8	T3/T42	88	7B
				LDW280-11059-5		BRACKET ASSY					NONE	NONE	3A
				LDW280-11059-3		STIFFENER ASSY					NONE	NONE	6A
				LDW280-11059-1	E	BRACKET ASSY					NONE	NONE	4C

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030
						T3/T42	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11059	C

SCALE NONE

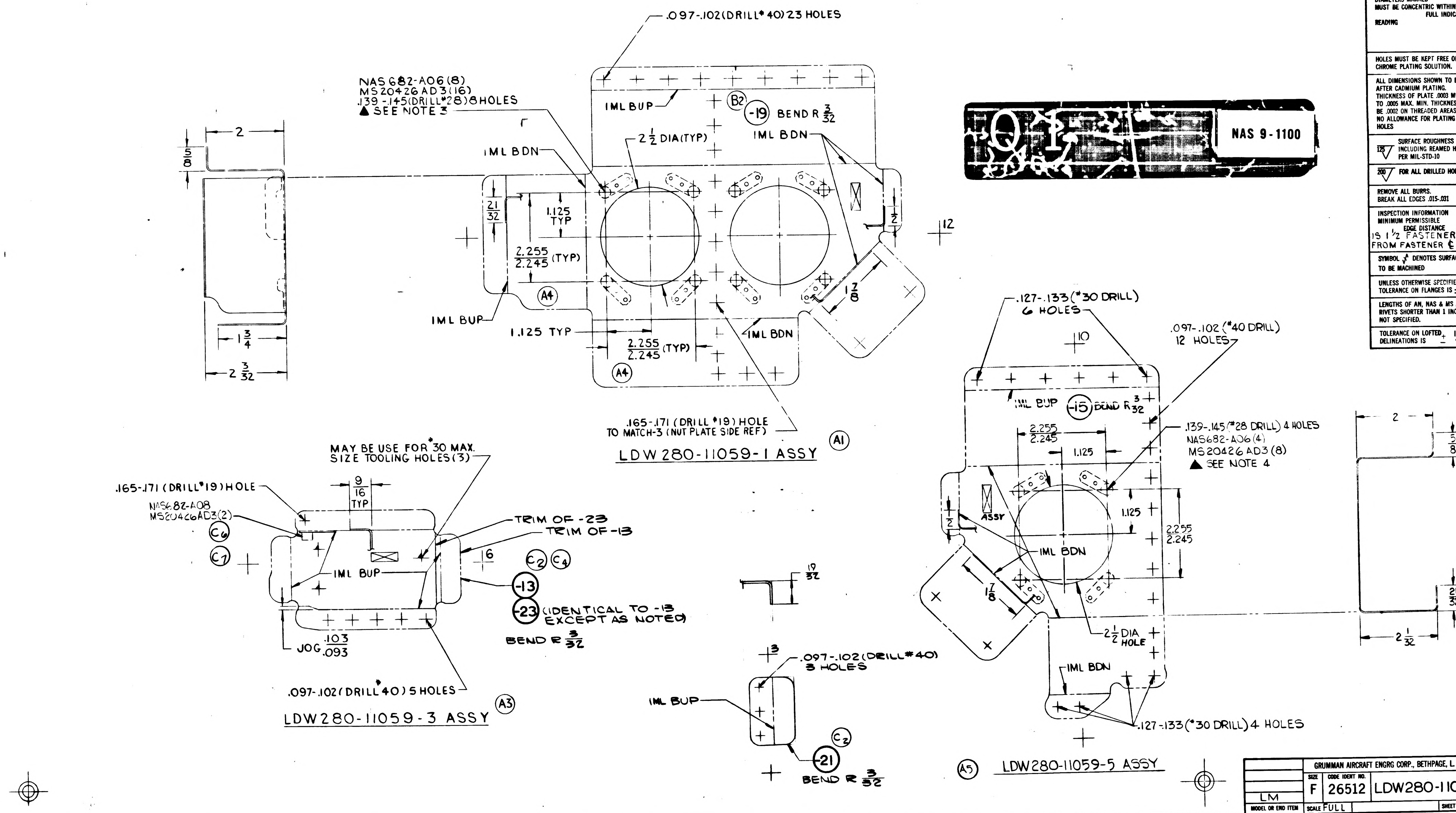
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS EXCEPT AS NOTED.
2. INSTALL FASTENERS AS PER LSP 14-15302.
3. HOLES MARKED ▲ TO BE COORDINATED WITH CORRESPONDING HOLE PATTERN ON LDW 390-21055.
4. HOLES MARKED ▲ TO BE COORDINATED WITH CORRESPONDING HOLE PATTERN ON LDW 390-53057



.097-.102 (DRILL #40) 23 HOLES
NAS 682-A06 (8)
MS 20426 AD3 (16)
.139-.145 (DRILL #28) 8 HOLES
▲ SEE NOTE 3
IML BUP
B2
-19
BEND R 3/32
2 1/2 DIA (TYP)
IML BDN
2
5/8
21/32
1.125 TYP
2.255 / 2.245 (TYP)
A4
IML BUP
1 3/4
2 3/32
1.125 TYP
2.255 / 2.245 (TYP)
IML BDN
7/8
12
.165-.171 (DRILL #19) HOLE TO MATCH-3 (NUT PLATE SIDE REF)
LDW 280-11059-1 ASSY
A1
NAS 9-1100
.127-.133 (#30 DRILL) 6 HOLES
10
.097-.102 (#40 DRILL) 12 HOLES
IML BUP
-15
BEND R 3/32
.139-.145 (#28 DRILL) 4 HOLES
NAS682-A06 (4)
MS20426 AD3 (8)
▲ SEE NOTE 4
2.255 / 2.245
1.125
ASSY
IML BDN
7/8
2 1/2 DIA HOLE
IML BDN
.127-.133 (#30 DRILL) 4 HOLES
A5
LDW280-11059-5 ASSY
2
5/8
21/32
2 1/32
MAY BE USE FOR #30 MAX. SIZE TOOLING HOLES (3)
9/16 TYP
.165-.171 (DRILL #19) HOLE
NAS682-A08
MS20426AD3 (2)
C6
C7
TRIM OF -23
TRIM OF -13
16
IML BUP
C2
C4
-13
-23 (IDENTICAL TO -13 EXCEPT AS NOTED)
BEND R 3/32
JOG .103/.093
.097-.102 (DRILL #40) 5 HOLES
LDW280-11059-3 ASSY
A3
19/32
.097-.102 (DRILL #40) 3 HOLES
IML BUP
C2
-21
BEND R 3/32

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE EDGE DISTANCE IS 1 1/2 FASTENER DIA FROM FASTENER ℄	√
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	√
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	√
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	√

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	F	26512	LDW280-11059	C
	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

LDW280-11059 C

LDW280-11060 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28279	LM-2(32)	1 EA
LM	LDW280-28279	LM-1(31)	1 EA
LM	LDW280-28279	LTA-8(18)	1 EA

PART NO. LDW280-11060-13,-15&-17

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28279	LM-2(32	1

LDW280-11060-27

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28279	LM-1(31)	1
LM	LDW280-28279	LTA-8(18)	1

PART NO. LDW280-11060-11

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 140	LDW280-53279	LM-4 (34)	1 EA
LM	LDW280-54279	LM-15(45)	1 EA
		LM-14(44)	
		LM-13(43)	
		LM-12(42)	
		LM-11(41)	
		LM-10(40)	
		LM-9(39)	
		LM-8(38)	
		LM-7(37)	
		LM-6(36)	
	LDW280-54279	LM-5(35)	
LM	LDW280-53279	LM-3(33)	1 EA

PART NO. LDW280-11060-19,-21,-23&-29

GAEC SCH NO. 30

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ Sh

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -29

GRUMMAN REL INFO A

PRIM NO. X(001) 215 ME-1A 3/26/6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.010 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY SALVADOR

LAYOUT BY SALVADOR

CHECKED BY

GR. LDR J. Pusateri 4/4

VDI 4/4

STR. 4/5

STR. Hilderman 4/5

THERMO

WEIGHTS 4 11

PROJ ENGR 4-12-66

REL GROUP G. Caramanis 4-14

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP
A/S CABIN - FF LOWER

SIZE B

CODE IDENT NO. 26512

LDW280-11060 A

SCALE NONE

SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE, LAST REV. NO CHANGE, G. WIEBER 3-20-69 LOFTED WAS DIM. "E" SIZE WAS ROLL SIZE "J."						
A	1	1.00 & 1.10							INC LEO280-428. ADDED SH 1.10	LM-3 THRU LM-15			G. WIEBER 3-20-69		
	2	1.00							INC LEO280-437	LM-3 THRU LM-15					
	3	1.00, 2.00 & 3.00							INC EO A3	LM-3 THRU LM-15					
	4	1.00, 2.00 & 3.00							INC EO A4	LM-3 THRU LM-15					
	5	1.00, 2.00 & 3.00							INC EO A5	LM-2 THRU LM-15					
	6	1.00							INC LEO280-901	LM-4 THRU LM-15			E.C.G.		
	7	1.00		LFM 140					INC LEO280-1062	LM-4			HOFSISS 3-20-69		
	8	1.00		LFM140					INC LEO280-1063	LM-4		H.D.	E.C.G.		

CHG APPROVED	LTR	GROUP LDR	VEH.DES.INT.	STRUCTURES	STRUCTURES	THERMO	WEIGHTS					
	A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11060	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11060-29	E	CLIP	AL ALLOY SH.	QQ-A-250/4	2024-0	.050 x 2 x 3	T42	88	
		-27						.045 x 2 x 3	T42		
		-23						.050 x 3 x 3	T42		
		-21						.050 x 2 x 3	T42		
		-19					2024-0	.050 x 2 x 3	T42		
		-17					2024-T3	.032 x 2 x 3	NONE		
		-15					2024-T3	.032 x 2 x 2	NONE		
		-13					2024-0	.045 x 2 x 3	T42		
		LDW280-11060-11	E	CLIP	AL ALLOY SH	QQ-A-250/4	2024 0	.045 x 2 x 3	T42	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030
T42	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11060	A

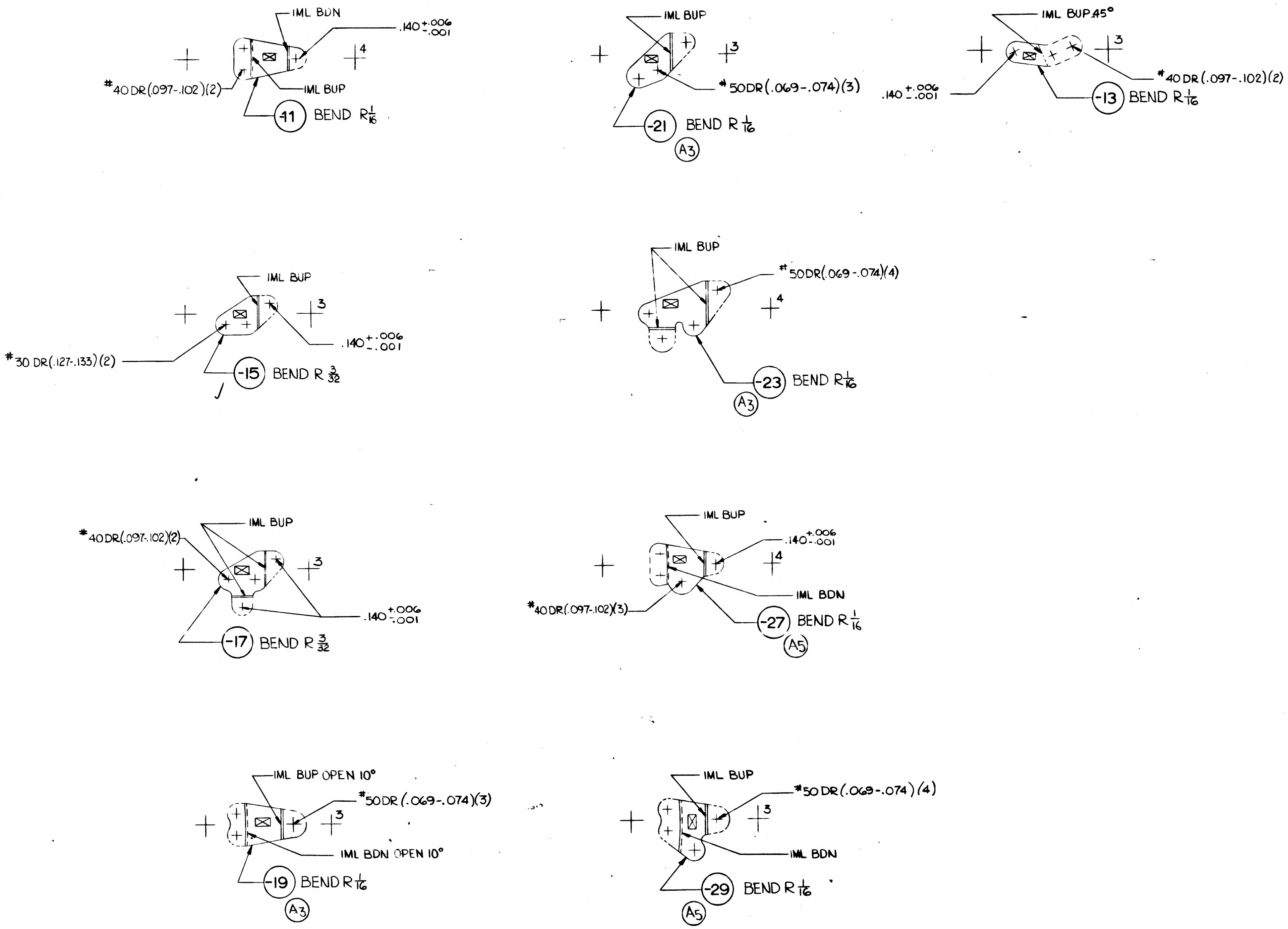
SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
INSTALL RIVETS IN ACCORDANCE WITH	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓



IML BDN
.140 +.006 -.001
3
4
#40 DR (.097-.102)(2)
IML BUP
-11 BEND R 1/16
IML BUP
3
#50 DR (.069-.074)(3)
-21 BEND R 1/16
A3
IML BUP 45°
3
#40 DR (.097-.102)(2)
.140 +.006 -.001
-13 BEND R 1/16
IML BUP
3
.140 +.006 -.001
#30 DR (.127-.133)(2)
-15 BEND R 3/32
IML BUP
#50 DR (.069-.074)(4)
4
-23 BEND R 1/16
A3
#40 DR (.097-.102)(2)
IML BUP
3
.140 +.006 -.001
-17 BEND R 3/32
IML BUP
.140 +.006 -.001
4
IML BDN
#40 DR (.097-.102)(3)
-27 BEND R 1/16
A5
IML BUP OPEN 10°
#50 DR (.069-.074)(3)
3
IML BDN OPEN 10°
-19 BEND R 1/16
A3
IML BUP
#50 DR (.069-.074)(4)
3
IML BDN
-29 BEND R 1/16
A5

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	E	26512	LDW280-11060	A
	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION SUPERSEDES LDW280-11060 NC 4-12-66

ENG 73.4 REV. 5-67

LDW280-11061

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO	REQD PER MODULE OR END ITEM
LEM	28279	LEM (32)	4EA
		LEM (31)	4EA
		(18)	4EA
PART NO LDW280 11061-11		30	

3

SH REV STATUS FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1:00		2:00		[redacted]				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO USED

GRUMMAN REL INFO

PRIM NO. LE(001) MP12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS DECIMALS - ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY

LAYOUT BY

CHECKED CAE(4)

WEIGHTS S Robusch 4-8

PROJ ENGR 4-8-66

REL GROUP C Caramanica 4-9-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SPRING-EXTENSION

SIZE B

CODE IDENT NO 26512

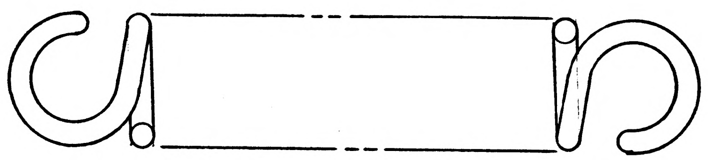
LDW280 11061

SCALE NONE

SHEET 1 OF 2

01

NAS 9-1100



NOTES-

1 STRESS RELIEVE TO ELIMINATE COLD BEND STRESSES, CADMIUM PLATE & EMBRITTLEMENT RELIEVE PER QQ-P-416.

MATL .059 MUSIC WIRE QQ-W-470
MEAN DIA .375±.006
FREE LTH (INSIDE LOOPS) 1.645±.040
ACTIVE COILS -17
END LOOPS EQUAL TO MEAN DIA.
MAX EXT LTH @ 17#±10% =2.320
INITIAL TENSION 3.5#±10%

THIS DWG WILL BE REDRAWN ON A PRODUCTION FORMAT

I&T=E

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
SIZE B	CODE IDENT NO. 26512	LDW280-11061
SCALE NONE		SHEET 2.00

ENG 73.1 6-64

01

NAS 9-1100

A

NO 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 428
CONTROL INFO NO. LDW280A-4229

ON THE FOLLOWING DWGS., ADD IN M/B LM-3(33) THRU LM-15(45) EFFECTIVITY.

DWG. No.	CHG. No.	DASH No.*	NEXT ASSY.	REQD/MOD.	ADD EFFECTIVITY
LDW280-11478	A2	-11, -12, -13, -14, -15, -17 & -19	LDW280-51174	1 EA.	LM-3(33) THRU LM-15(45)
LDW280-11479	A1	-11, -13, -14 & -15		1 EA.	
LDW280P11058	C3	-1, -2, -3 & -4		1 EA.	
LDW280-11520	B2	-13, -14, -15, -17, -18, -19		1 EA.	
		-20, -21, -23 & -24		1 EA.	
LDW280-11520		-25	LDW280-51174	2	
LDW280-10329	C7	-13, -21, -27, -35, & -37	LDW280-51182	1 EA.	
LDW280-10929		-25 & -29		2 EA.	
LDW280-10930	B8	-11, -21 & -23		1 EA	
LDW280-10930		-19		2	
LDW280-10931	C3	-11, -19, -21 & -22		1 EA.	
LDW280-11487	A2	-11, -13, -15, -17, -19 & -21		1 EA.	
LDW280-11488	A3	-11, -13, -15, -19, -21 THRU -24		1 EA.	
LDW280P10933	A3	-11	LDW280-51182	1	
LDW280-10945	D3	-13, -15, -29	LDW280-53279	1 EA.	
LDW280-10945		-33, -34, -35 & -36		1 EA.	
LDW280-11042	A1	-11, -12, -13 & -15		1 EA.	
LDW280 P11041	A1	-11		1	
		-13		2	
LDW280P11041		-15 & -17		4 EA.	
LDW280-11043	A1	-13		1	
LDW280-11044	A2	-11		1	
LDW280-11044		-13		2	
LDW280-11060	A1	-13	LDW280-53279	1	
LDW280-10774	C2	-15 & -17	LDW280-53241	1 EA.	
LDW280-10775	A5	-11		2	
		-13 & -15		4 EA.	
LDW280-10775		-17 THRU -22		1 EA.	
LDW280-11129	E1	-11, -13, -17 & -21	LDW280-53241	1 EA.	
LDW280-11504	A1	-15 & -17	LDW280-53875	1 EA.	
LDW280-11538	A1	-11, -13 & -15		1 EA.	
LDW280-11061	A1	-11	LDW280-53279	4	
LDW280-11062	A1	-11		2	LM-3(33) THRU LM-15(45)

(3)

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: TO EXTEND EFFECTIVITY

DESCRIPTION OF EO: FOR * ADDED LM-3 THRU LM-15 EFFECTIVITY.

GAEC EO RELEASE: 12/30

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LM-3 (33) THRU LM-15 (45)		

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
✓		NOT	REQD	DATE	12-12-66			–	12/20		12-22-66	12/22/66
REVISE DWG	RECORD EO	REWORK	SCRAP	6	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: C | DRAWING TITLE: NOTED | DRAWING NO.: LEO 280 | EO NO. 428

ISSUED BY F. SHANLEY 12/9/66 X1411 SECTION VEH. DESIGN INT. GROUP NO. 335 PL 35

01
NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280 EO NO. 901
CONTROL INFO NO. LDW280B2729

ON FOLLOWING DWGS, FOR DASH No. ✳ REVISE AS FOLLOWS:
N/A FOR LM-4(34) AND SUB. WAS LDW280-53279, NOW LDW280-54279 AS NOTED.

DWG NO.	DASH No. ✳	CHG No.	EFFECTIVITY
✓ LDW 280 P10869	-11	B7	LM-4(34) THRU LM-15(45)
✓ P11041	-13, -15, -17, -21	C3	
✓ -10743	-13, -17, -19	F6	LM-4(34) THRU LM-15(45)
	-15		LM-4(34) AND LM-5(35)
	-15-1		LM-6(36) THRU LM-15(45)
✓ -10945	-13, -33, -34, -39, -45	E6	LM-4(34) THRU LM-15(45)
✓ -11042	-15	A2	
✓ -11043	-11, -13, -15	A3	
✓ -11044	-12, -13, -21, -22, -23	A8	
✓ -11060	-19, -21, -23, -29	A6	
✓ -11061	-11	A2	
✓ -11062	-11	A2	
-11729	-11, -12, -13, -14, -15, -16	A2	
-11736	-11, -13, -14	A1	
LDW 280 -14344	-1, -3	E5	LM-4(34) THRU LM-15(45)

LFM

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	✓	LCR 2360 PKG #27

REASON FOR EO
INCREASE IN PLUME SHIELD PROTECTION

DESCRIPTION OF EO
FOR ✳ REVISED N/A. N/A WAS LDW280-53279 FOR LM-4(34) AND SUB.

GAEC EO RELEASE 3/28/68 (5)

MODEL	~~PROCURING ACTIVITY NO.~~ E1	GAEC UNIT NO.	~~SUB CONTR UNIT NO.~~
LM	LM 140	LM-4(34), L	M-5(35)
LM		LM-6(36) THRU LM-15(45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
✓		NOT	REQ	DATE	3/25/68	3/26/68		3/25/68	3/26/68		3/26/68	3/27/68
REVISE DWG	RECORD EO	REWORK	SCRAP	—	VDI	THERMO ~~SUPPORT~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GAEC~~

PRIORITY: C
DRAWING TITLE: SEE DWG.
DRAWING NO.: LEO 280
EO NO.: 901

3/28/68
ISSUED BY D LOZINSKI X1641
SECTION VEH DES INT.
GROUP NO. 335 PL 25

01 NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280 | EO NO. 1062
CONTROL INFO NO. LDW280-B 4505

IN M/B ADD LM-4(34) EFF. N/A LDW280-53279
FOR THE FOLLOWING DWGS. & DASH NO. *

DWG. NO.	DASH NO. *	CHG. NO.
LDW280-10945	-13, -45, -33, -34, -39	F2 ✓
-10743	-13, -15, -17, -19	H1 ✓
-11042	-15	B1 ✓
-11044	-12, -13, -21, -22, -23	B1 ✓
-11060	-19, -21 -23, -29	A7 ✓
-11061	-11	A3 ✓
-11062	-11	A3
-11729	-11, -12, -13 -14, -15, -16	A3
-11736	-11, -13, -14	A2
-11759	-13, -15, -17, -19	B7
-14344	-1, -3	F4
11043	-11, -13 -15	A4
LDW280-P11041	-21, -13, -15, -17	D1

REWORK INFO. PART IN EXISTENCE MAY BE USED

NO. REQ'D/MOD SAME AS LM-3 (33) REQ.

LFM

01

NAS 9-1100

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	✓

LCD 2360 PKG 32 SH 10 & 11 (5)

REASON FOR EO: UPDATED LM-4 (34) REQ.

DESCRIPTION OF EO: FOR DASH *
ADDED LM-4 EFF. ~ N/A LDW280 - 53279

GAEC EO RELEASE: C — CK 7/20

MODEL	~~PROCURING ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 140	LM-4 (34)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK NOT | SCRAP REQ.

APPROVED BY								
DATE	7/13/68	7/16/68		7/13/68	7/16/68		7/16/68	7/20/68
	VDI	~~SUPPORT~~ THERM	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C

DRAWING TITLE: SEE DWG.

DRAWING NO.: LEO280

EO NO.: 1062

7-13-68
ISSUED BY H. TREFFEISEN x 7032 SECTION VDI GROUP NO. 335 PL 25

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 1063
CONTROL INFO NO. LDW280 B4506

IN M/B REMOVE LM-4(34) EFF. N/A LDW28054279
FOR THE FOLLOWING DWGS. & DASH NO. *

DWG. NO.	DASH NO. *	CHG. NO.
LDW280-10945	-13, -39, -51, -49, -50	F3
-10743	-15 -13, -17, -19	H2
-11042	-15	B2
-11043	-11, -13, -15	A5
-11044	-12, -13, -21 -22, -23	B2
-11060	-21, -19, -23, -29	A8
-11061	-11	A4
-11062	-11	A4
-11729	-11, -12, -13 -14, -15, -16	A4
-11736	-11, -13, -14	A3
-11759	-13, -15, -19	B8
-14344	-1, -3	F5
-12003	-1, -15	A1
-12008	-11, -13	A9
LDW-280-P11041	-21, -13, -15, -17	D2

LFM

DETAIL SPEC REQ ☐	CL II ENGRG CHG ☐	CL I ENGRG CHG ☑	LCD2360 PKG 32 SH 9 & 10

REASON FOR EO: UPDATED LM-4 REQ

DESCRIPTION OF EO: FOR DASH * REMOVED LM-4 EFF N/A LDW280-54279

GAEC EO RELEASE: JK 7/20/68 (5)

MODEL	~~PROCURING ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 140	LM-4 (34)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK | SCRAP ✓

APPROVED BY									
DATE	7/12/68	7/16/68		7/12/68			7/16/68	7/29/68
	VDI	~~SUPPORT~~ THERM	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C
DRAWING TITLE: SEE DWG.
DRAWING NO.: LEO 280
EO NO.: 1063

7-18-68
ISSUED BY H. TREFFEISEN x 7033 SECTION VDI GROUP NO. 335 PL 25

01 NAS 9-1100

LDW280-11062

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO	REQD PER MODULE OR END ITEM
	LDW280-28279	[illegible] (32)	2 EA
		[illegible] (31)	2 EA
		LTA (18)	2 EA
PART NO LDW280-11062-11		GAEC SCH NO 30	

3

SH REV STATUS FOR DESCRIPTION OF REV SEE SUBQ SH				
SHEET	1:00	2:00		
REV				
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO USED

GRUMMAN REL INFO

PRIM NO 25 | E(601) MP12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCE UNLESS SPECIFIED FRACTIONS DECIMALS ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO [illegible]

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY [illegible]

LAYOUT BY [illegible]

CHECKED BY CNB Ⓐ

WEIGHTS D Roland 4-8

PROJ ENGR [illegible] 4-8-66

REL GROUP [illegible] 4-6

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SPRING-COMPRESSION
A/S [illegible] LOWER

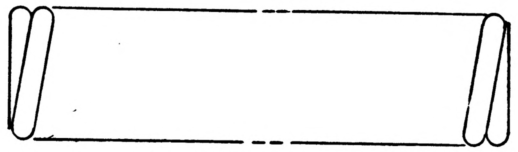
SIZE	CODE IDENT NO	
B	26512	LDW280 11062

SCALE NONE SHEET 1 OF 2

THIS IS AN ORIGINAL DWG.

01

NAS 9-1100



MATL- .035 MUSIC WIRE QQ-W-470

MEAN DIA .312 ± .010

FREE LTH 1.775 ± .080

NO. COILS (TOTAL) 20 (SQ & GRD ENDS)

NO. ACTIVE COILS 18

SPRING TO OPERATE OVER .190 DIA.

MIN HT .875

LOAD @ .875 HT - 4.5 ± .45 #

NOTES-

1 STRESS RELIEVE TO ELIMINATE COLD BEND STRESSES, CADMIUM PLATE & EMBRITTLEMENT RELIEVE PER QQ-P-416.

2. I & T EXEMPT

THIS DWG WILL BE REDRAWN ON A PRODUCTION FORMAT

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-11062
SCALE NONE
SHEET 2.00

ENG 73.1 6-64

01

NAS 9-1100

A ✳

NO 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280		EO NO. 428	
CONTROL INFO NO. LDW280A-4229			

ON THE FOLLOWING DWGS., ADD IN M/B LM-3(33) THRU LM-15(45) EFFECTIVITY.

DWG. No.	CHG. No.	DASH No.✳	NEXT ASSY.	REQD/MOD.	ADD EFFECTIVITY
LDW280-11478	A2	-11, -12, -13, -14, -15, -17 & -19	LDW280-51174	1 EA.	LM-3 (33) THRU LM-15 (45)
LDW280-11479	A1	-11, -13, -14 & -15	↕	1 EA.	↕
LDW280P11058	C3	-1, -2, -3 & -4	↕	1 EA.	↕
LDW280-11520 ↕ LDW280-11520	B2	-13, -14, -15, -17, -18, -19 -20, -21, -23 & -24 -25	↕ ↕ LDW280-51174	1 EA. 1 EA. 2	↕
LDW280-10929 LDW280-10929	C7	-13, -21, -27, -35, & -37 -25 & -29	LDW280-51182	1 EA. 2 EA.	↕
LDW280-10930 LDW280-10930	B8	-11, -21 & -23 -19	↕	1 EA 2	↕
LDW280-10931	C3	-11, -19, -21 & -22	↕	1 EA.	↕
LDW280-11487	A2	-11, -13, -15, -17, -19 & -21	↕	1 EA.	↕
LDW280-11488	A3	-11, -13, -15, -19, -21 THRU -24	↕	1 EA.	↕
LDW280P10933	A3	-11	LDW280-51182	1	↕
LDW280-10945 LDW280-10945	D3	-13, -15, -29 -33, -34, -35 & -36	LDW280-53279	1 EA. 1 EA.	↕
LDW280-11042	A1	-11, -12, -13 & -15	↕	1 EA.	↕
LDW280 P11041 ↕ LDW280P11041	A1	-11 -13 -15 & -17	↕	1 2 4 EA.	↕
LDW280-11043	A1	-13	↕	1	↕
LDW280-11044 LDW280-11044	A2	-11 -13	↕	1 2	↕
LDW280-11060	A1	-13	LDW280-53279	1	↕
					↕
LDW280-10774	C2	-15 & -17	LDW280-53241	1 EA.	↕
LDW280-10775 ↕ LDW280-10775	A5	-11 -13 & -15 -17 THRU -22	↕	2 4 EA. 1 EA.	↕
LDW280-11129	E1	-11, -13, -17 & -21	LDW280-53241	1 EA.	↕
LDW280-11504	A1	-15 & -17	LDW280-53875	1 EA.	↕
LDW280-11538	A1	-11, -13 & -15		1 EA.	↕
LDW280-11061	A1	-11	LDW280-53279	4	↕
LDW280-11062	A1	-11		2	LM-3 (33) THRU LM-15 (45)

(3)

DETAIL SPEC REQ ☐	CL II ENGRG CHG ☐	CL I ENGRG CHG ☐		
REASON FOR EO To EXTEND EFFECTIVITY	DESCRIPTION OF EO FOR ✳ ADDED LM-3 THRU LM-15 EFFECTIVITY.			GAEC EO RELEASE 12/30

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LM-3 (33) THRU LM-15 (45)		

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY									
✓		NOT	REQD	DATE	12-12-66			–	12-D		12-22-66	12/22/66	
REVISE DWG	RECORD EO	REWORK	SCRAP	6	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG		
PRIORITY C	DRAWING TITLE NOTED							DRAWING NO LEO 280				EO NO. 428	

ISSUED BY F. SHANLEY 12/9/66 X1441 SECTION VEH. DESIGN INT. GROUP NO. 335 PL 35

01
NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280		EO NO. 901
CONTROL INFO NO. LDW280B 2729		

ON FOLLOWING DWGS, FOR DASH No. ✳ REVISE AS FOLLOWS:

N/A FOR LM-4(34) AND SUB. WAS LDW280-53279, NOW LDW280-54279 AS NOTED.

DWG NO.	DASH No. ✳	CHG. No.	EFFECTIVITY
LDW 280 P10869	-11	B7	LM-4(34) THRU LM-15(45)
P11041	-13, -15, -17, -21	C3	
-10743	-13, -17, -19	F6	LM-4(34) THRU LM-15(45)
	-15		LM-4(34) AND LM-5 (35)
	-15-1		LM-6(36) THRU LM-15(45)
-10945	-13, -33, -34, -39, -45	E6	LM-4 (34) THRU LM-15 (45)
-11042	-15	A2	
-11043	-11, -13, -15	A3	
-11044	-12 -13 -21, -22, -23	A8	
-11060	-19, -21 -23, -29	A6	
-11061	-11	A2	
-11062	-11	A2	
-11729	-11, -12, -13 -14, -15, -16	A2	
-11736	-11, -13, -14	A1	
LDW 280 -14344	-1, -3	E5	LM-4(34) THRU LM-15 (45)

LFM

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCR 2360 PKG #27

REASON FOR EO: INCREASE IN PLUME SHIELD PROTECTION

DESCRIPTION OF EO: FOR ✳ REVISED N/A, N/A WAS LDW280-53279 FOR LM-4(34) AND SUB.

GAEC EO RELEASE: VC 3/28/68 (5)

MODEL	~~PROCURING ACTIVITY NO.~~ E1	GAEC UNIT NO.	~~SUB CONTR UNIT NO~~
LM	LM 140	LM-4(34). L	M-5(35)
LM		LM-6(36) THRU LM-15(45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG	RECORD EO	REWORK	SCRAP
✓		NOT	REQ

APPROVED BY							
DATE	3/25/68	3/26/68		3/21/68	3/26/68		3/26/68	3/27/68
—	VDI	THERMO ~~SUPPORT~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONF.~~

PRIORITY: C

DRAWING TITLE: SEE DWG.

DRAWING NO.: LEO 280

EO NO.: 901

3/28/68
ISSUED BY D LOZINSKI X1641 SECTION VEH DES INT. GROUP NO. 335 PL 25

01
NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280
EO NO. 1062
CONTROL INFO NO. LDW280-B 4505

IN M/B ADD LM-4(34) EFF. N/A LDW280-53279
FOR THE FOLLOWING DWGS. & DASH NO. *

DWG. NO.	DASH NO. *	CHG. NO.
LDW280-10945	-13, -45, -33, -34, -39	F2 ✓
-10743	-13, -15, -17, -19	H1 ✓
-11042	-15	B1 ✓
-11044	-12, -13, -21, -22, -23	B1 ✓
-11060	-19, -21, -23, -29	A7 ✓
-11061	-11	A3 ✓
-11062	-11	A3 ✓
-11729	-11, -12, -13 -14, -15, -16	A3
-11736	-11, -13, -14	A2
-11759	-13, -15, -17, -19	B7
-14344	-1, -3	F4
11043	-11, -13 -15	A4
LDW280-P11041	-21, -13, -15, -17	D1

REWORK INFO. PART IN EXISTENCE MAY BE USED.

NO. REQ'D/MOD SAME AS LM-3(33) REQ.

LFM

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 2360 PKG 32 SH 10 & 11	(5)

REASON FOR EO: UPDATED LM-4 (34) REQ.

DESCRIPTION OF EO: FOR DASH * ADDED LM-4 EFF. ~ N/A LDW280 - 53279

GAEC EO RELEASE: C JK 7/20

MODEL	PROCURING ~~ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM / 40	LM-4 (34)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓ REVISE DWG	RECORD EO	NOT REWORK	REQ. SCRAP

APPROVED BY								
DATE	7/13/68	7/16/68		7/13/68	7/16/68		7/16/68	7/20/68
	VDI	~~SUPPORT~~ THERM	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C
DRAWING TITLE: SEE DWG.
DRAWING NO.: LEO 280
EO NO.: 1062

7-13-68
ISSUED BY H. TREFFEISEN x 7033 SECTION VDI GROUP NO. 335 PL 25

01 NAS 9-1100

01 NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 1063
CONTROL INFO NO. LDW280 B4506

IN M/B REMOVE LM-4(34) EFF. N/A LDW28054279
FOR THE FOLLOWING DWGS. & DASH NO. *

DWG. NO.	DASH NO. *	CHG. NO.
LDW280-10945	-13, -39, -51, -49, -50	F3
-10743	-15 -13, -17, -19	H2
-11042	-15	B2
-11043	-11, -13, -15	A5
-11044	-12, -13, -21 -22, -23	B2
-11060	-21, -19, -23, -29	A8
-11061	-11	A4
-11062	-11	A4
-11729	-11, -12, -13 -14, -15, -16	A4
-11736	-11, -13, -14	A3
-11759	-13, -15, -19	B8
-14344	-1, -3	F5
-12003	-1, -15	A1
-12008	-11, -13	A9
LDW-280-P11041	-21, -13, -15, -17	D2

LFM

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐ V LCD 2360 PKG 32 SH 9 & 10 (5)

REASON FOR EO: UPDATED LM-4 REQ

DESCRIPTION OF EO: FOR DASH * REMOVED LM-4 EFF N/A LDW280-54279

GAEC EO RELEASE: JK 7/20/68

MODEL	PROCURING ~~ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 140	LM-4 (34)	

DRAWING CHANGE REQ: ✓ REVISE DWG | RECOR. EO

DISPOSITION OF PARTS: REWORK | ✓ SCRAP

APPROVED BY								
DATE	7/12/68	7/16/68		7/12/68			7/16/68	7/23/68
	VDI	~~SUPPORT~~ THERM	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C

DRAWING TITLE: SEE DWG.

DRAWING NO.: LEO 280

EO NO.: 1063

7-18-68
ISSUED BY H. TREFFEISEN x 7033 SECTION VDI GROUP NO. 335 PL 25

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28331	LM-3(33)	1

PART NO. LDW280-11063-7-1 | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28331	LM-3(33)	2
LM	LDW280-28331	LM-2(32)	2
LM	LDW280-28331	LM-1(31)	2

PART NO. LDW280-11063-9 | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28331	LM-3(33)	1
LM	LDW280-28331	LM-2(32)	1
LM	LDW280-28331	LM-1(31)	1

PART NO. LDW280-11063-8 | GAEC SCH NO.

B LDW280-11063

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28331	LM-2(32)	1
LM	LDW280-28331	LM-1(31)	1

PART NO. LDW280-11063-7 | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28331	LTA-1(11)	1

PART NO. LDW280-11063-1 | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MOD. OR SER NO	REQD PER MODULE OR END ITEM
LM	LDW280-28331	LTA-8(18)	1
LM	LDW280-28331	LTA-1(11)	1

PART NO. LDW280-11063-15 | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28331	LEM-3(33)	1 EA
↕	↕	LEM-2(32)	1 EA
		LEM-1(31)	1 EA
		LTA-8(18)	1 EA
LEM	LDW280-28331	LTA-1(11)	1 EA

PART NO. LDW280-11063-3, -19 & -21 | GAEC SCH NO. 31-1

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10		2.00	3.00				
REV	B	B		B	B				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED A

LAST DASH NO. USED -27

GRUMMAN REL INFO B

PRIM NO. 215 | lk(30) mp-5 | B-3/20/7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM NO. 1 | DOCUMENTATION TYPE II

DRAWN BY	PELLEGRINO 4-6-66
LAYOUT BY	PELLEGRINO 4-6-66
CHECKED BY	CNB
GROUP LDR	PHILLIPS 4-6-66
VEH. DES. INT	BISCHOFF 4-6-66
STRUCTURES	F BUNCE BW 4 8
STRUCTURES	HILDERMAN 4-9-66
WEIGHTS	ROBESCH 4-11-66
PROJ ENGR	J. ALBER / RC 4-12-66
REL GROUP	BOTTI 4-14-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT ASSY
ASCENT STAGE - M/S ENG MOUNT
VIBRATION AMPLIFIER

SIZE B | CODE IDENT NO. 26512 | LDW280-11063 | B (3)

SCALE NONE | SHEET 1 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11063 N/C 4-14-66

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
				REDRAWN	NO			CHANGE LAST	REVISION N/C. ADDED SH. 1.10,2.00, 3.00.LOFTED DWG WAS DIM.	E.OCONNELL 8-29-66					
A	1							EO A1	IN B/M AND FIELD ADDED -19 & -21; REMOVED -17.	NOTED		-17	OCCONNELL 8-29-66		
	2							EO A2	ADDED EO TO RECORD BLOCK		NOTED				
	3							EO A3	ADDED LEM-3 (33) EFFECTIVITY FOR -19 & -21		✓				
B	1							E.O. B1	CANCELLED BY EO B2	NOT REQD	NOT	REQD	P. CAPPADORO 5-15-67		
	2							E.O. B2	IN FLD & B/M: ADDED LDW280-11063-7 & -21, NAS697A3 (4), MS20426AD3 (8). IN MODEL BLOCK REMOVED LTA-8, LM-1, LM-2, & LM-3 FROM -1 ASSY. CANCELLED E.O. B1	LM-2(32) LM-3(33) LM-1(31) LTA-8(18)		-1			
	3							E.O. B3	REF. E.O. B2, -25 WAS -21	LM-1 (31) LM-2(32) LM-3(33)	NOT	REQD			
	4							E.O. B4	IN FLD & B/M ADDED -8 SUPPORT ASSY & -26 SUPPORT.						
	5							E.O. B5	IN MOD BLK REMOVED LM-3 FROM -7, TRIMMED -7 CREATING -7-1.	LM-3(33)	✓	-7			
	6						✓	E.O. B6	ADDED -9 SUPPORT ASSY, -27 & NAS697A3 (2) WITH MS20426AD3 (4)	LM-1(31), LM-2(32) LM-3(33)	NOT	REQD			
	7						✓	E.O. B7	REMOVED -7-1 & -25-1 & -25, -26-13. FROM -7 MOD BLK, REMOVED LM-2 REQMTS. FROM -3, -8, -15, -19, & -21 M/B, REMOVED LM-2 & LM-3	LM-2(32) LM-3(33)		✓			
	8						✓	LEO 280-561	ON INCORP. OF E.O.B5, -25 WAS -21, -25-1 WAS -21-1	LM-3 (33)	NOT	REQD			
	9						✓	E.O. B9	FROM -9 MODEL BLOCK, REMOVED LM-2 & LM-3 REQUIREMENTS	LM-2(32), LM-3(33)		-9			
	10						✓	E.O. B10	THIS IS A REVISION OF E.O. B7. REMOVED FROM E.O.: REMOVE -7-1 ASSY & -25-1 SUPPORT & FROM -7 MODEL BLOCK, REMOVE LM-2 REQUIREMENTS. FROM -15 MOD BLK, REMOVE LM-1, LM-2 & LM-3 REQUIREMENTS WAS FROM -3, -8, -15, -19 & -21 MOD. BLK, REMOVE LM-2 & LM-3 REQUIREMENTS. THIS IS A REVISION OF E.O. B9. TO -9 MODEL BLOCK, ADDED LM-2 & LM-3 REQUIREMENTS (NEXT ASSY. & QUANTITY REQ'D SAME AS LM-1).	LM-1 (31) LM-2(32) LM-3(33)		✓			

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11063	B
SCALE	NONE		SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY						CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
-9	-8	-7-1	-7	-3	-1											
2	4	4	4	4	4		NAS697A3	E	NUT PLATE	STD PART						
				2			NAS696A3		NUT PLATE	STD PART						
							MS20426AD3		RIVET	STD PART						
1							LDW280-11063-27		CHANNEL	AL ALLOY SH	QQ-A-250/4	2024-T3	.040×4×5	NONE	76	
	1						-26		SUPPORT		QQ-A-250/4		.040×6×7	NONE	88	
		1					-25-1		SUPPORT		QQ-A-250/4		.040×6×7	NONE		
			1				-25		SUPPORT		QQ-A-250/4		.040×6×7	NONE		
							-21		CLIP		QQ-A-250/4		.040×1 1/4×3 1/8	NONE		
							-19		CLIP		QQ-A-250/4		.040×1 3/8×3 1/8	NONE		
							-15		ANGLE		QQ-A-250/5	2024-T3	.040×2 1/4×3 1/4	NONE		
				1			-13		SUPPORT		QQ-A-250/4	2024	.040×5 3/4×6	T3/T42		
					1		-11		SUPPORT	AL ALLOY SH	QQ-A-250/5	2024-T3	.040×6×6 1/2	NONE	88	
							-9		SUPPORT ASSY					NONE	NONE	
							-8									
							-7-1									
							-7									
							-3									
							LDW280-11063-1	E	SUPPORT ASSY					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						76	ALODINE	LSP-14-9010
						88	ANODIZE	LSP-14-9030
						T42	AL HEAT TREAT	MIL-H-6088

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

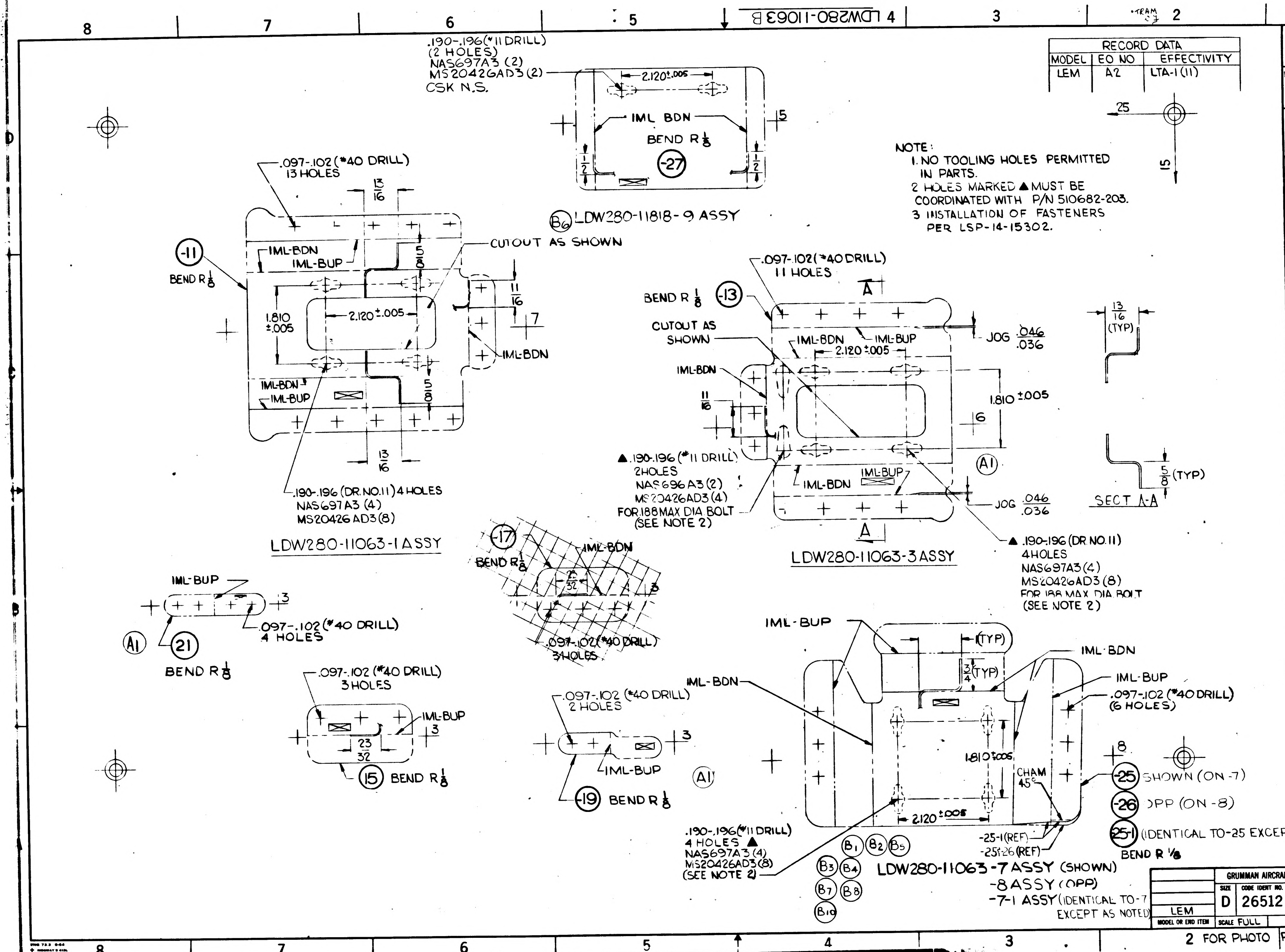
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11063	B
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


4 LDW280-11063 B
.190-.196 (#11 DRILL) (2 HOLES)
NAS697A3 (2)
MS20426AD3 (2)
CSK N.S.
2.120±.005
IML BDN
BEND R 1/8
15
1/2
-27
B6 LDW280-11818-9 ASSY
.097-.102 (#40 DRILL) 13 HOLES
13/16
-11
BEND R 1/8
IML-BDN
IML-BUP
CUTOUT AS SHOWN
5/8
11/16
7
1.810 ±.005
2.120±.005
IML-BDN
IML-BDN
IML-BUP
.190-.196 (DR.NO.11) 4 HOLES
NAS697A3 (4)
MS20426AD3 (8)
LDW280-11063-1 ASSY
.097-.102 (#40 DRILL) 11 HOLES
A
BEND R 1/8
-13
CUTOUT AS SHOWN
IML-BDN
IML-BUP
2.120±.005
JOG .046/.036
IML-BDN
11/16
1.810 ±.005
16
▲.190-.196 (#11 DRILL) 2HOLES
NAS696A3 (2)
MS20426AD3 (4)
FOR .188 MAX DIA BOLT (SEE NOTE 2)
IML-BUP
IML-BDN
A1
JOG .046/.036
A
LDW280-11063-3 ASSY
▲.190-.196 (DR NO.11) 4HOLES
NAS697A3 (4)
MS20426AD3 (8)
FOR .188 MAX DIA BOLT (SEE NOTE 2)
13/16 (TYP)
5/8 (TYP)
SECT A-A
25
15
-17
IML-BDN
BEND R 1/8
9/32
.097-.102 (#40 DRILL) 3 HOLES
IML-BUP
3
.097-.102 (#40 DRILL) 4 HOLES
A1
21
BEND R 1/8
.097-.102 (#40 DRILL) 3 HOLES
IML-BUP
3
23/32
15
BEND R 1/8
.097-.102 (#40 DRILL) 2 HOLES
3
IML-BUP
-19
BEND R 1/8
A1
IML-BUP
1 (TYP)
3/4 (TYP)
IML-BDN
IML-BDN
IML-BUP
.097-.102 (#40 DRILL) (6 HOLES)
1.810±.005
CHAM 45°
2.120±.005
8
-25 SHOWN (ON -7)
-26 OPP (ON -8)
-25-1 (IDENTICAL TO -25 EXCEPT AS SHOWN) (ON -7-1)
BEND R 1/8
-25-1 (REF)
-25 & -26 (REF)
.190-.196 (#11 DRILL) 4 HOLES ▲
NAS697A3 (4)
MS20426AD3 (8)
(SEE NOTE 2)
B1 B2 B5 B3 B4 B7 B8 B10
LDW280-11063-7 ASSY (SHOWN)
-8 ASSY (OPP)
-7-1 ASSY (IDENTICAL TO -7 EXCEPT AS NOTED)
8 7 6 5 4 3 2 1

RECORD DATA		
MODEL	EO NO	EFFECTIVITY
LEM	A2	LTA-1 (11)

NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. HOLES MARKED ▲ MUST BE COORDINATED WITH P/N 510682-203.
3. INSTALLATION OF FASTENERS PER LSP-14-15302.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ✓ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE D	CODE IDENT NO. 26512	LDW280-11063	R B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

2 FOR PHOTO REPRODUCTION 1

K2

01

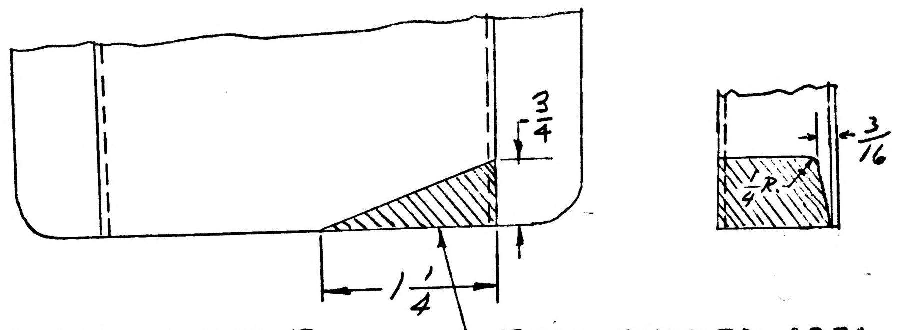
NAS 9-1100

B

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11063
EO NO. C1
CONTROL INFO NO. LM-5-15040



LDW280-11063-7

TRIM SHADED AREA AS SHOWN.

RELEASED BY LIAISON

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
TO PROVIDE CLEARANCE FOR INSTALLING STRUT LDW280-28866-19	ON-7 TRIMMED CORNER.	JK 825

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM-1(31)	

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
✓		✓	

APPROVED BY					DV	DV	DAM	
DATE					5/4/67	5/4/67	5-8-67	5/4/67
/		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SUPPORT ASSY. A/S-M/S-ENGINE MT. VIB. AMP.	LDW280-11063	C1

ISSUED BY LIAISON J. JARVIS
SECTION V.D.I.
GROUP NO. 280 PL 25

01

NAS 9-1100

B

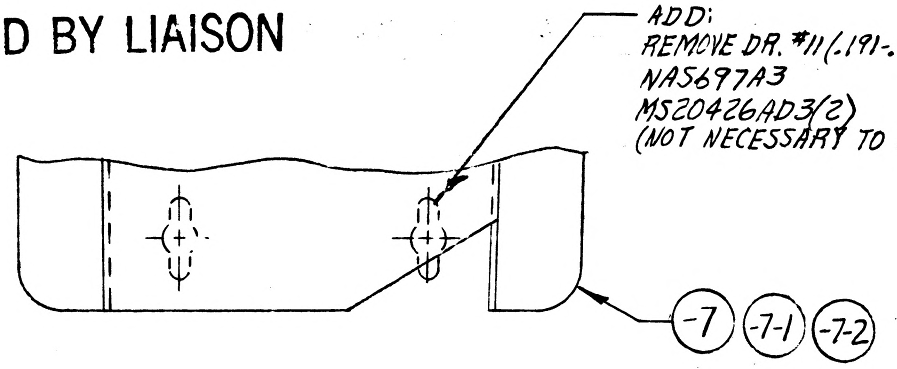
ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11063		EO NO. C2
CONTROL INFO NO. LM-5-13332		

THIS IS A REVISION OF E.O. C1
EFFECTIVITY OF E.O. LM-1, LM-2 & LM-3 WAS LM-1
TRIM -7, -7-1 & -7-2 WAS TRIM -7

RELEASED BY LIAISON



ADD:
REMOVE DR. #11 (.191-.196)
NAS697A3
MS20426AD3 (2)
(NOT NECESSARY TO PLUG)

DETAIL SPEC REQ	☐	CL II ENGRG CHG	✓	CL I ENGRG CHG	☐	5

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
TO CORRECT PROBLEM ON ALL APPLICABLE VEHICLES	REF. E.O. C1 EFF. LM-1, LM-2 & LM-3 WAS LM-1. TRIM -7, -7-1 & -7-2 WAS -7. FROM -7, -7-1 & -7-2, REMOVED DRILL #11 (1) HOLE, NAS697A3 (1) & MS20426AD3 (2)	C JK 31

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-1 (31)	
		LM-2 (32)	
		LM-3 (33)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY	WT			~	DFL	EWB	DAM	
✓		✓		DATE	5/6/67			~	5-6-67	5/6/67	5-9-67	5/6/67
REVISE DWG	RECORD EO	REWORK	SCRAP	1	VD1	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SUPPORT ASSEMBLY A/S M/S ENGINE MT. VIBRATION AMPLIFIER	LDW280-11063	C2

ISSUED BY F. STEINMETZ X6510 SECTION VD1 GROUP NO. 335 PL 5

01 NAS 9-1100

B

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11063		EO NO. C3
CONTROL INFO NO. LM-5-13339		

THIS IS A REVISION OF E.O. C2
REMOVE CALLOUT -7-2 FROM E.O.

RELEASED BY LIAISON

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG		5

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
-7-2 DOES NOT APPEAR ON THIS DWG.	REF. E.O. C2 REMOVED CALLOUT -7-2 FROM E.O.	VK —

MODEL	EFFECTIVITY PROCURING ACTIVITY NO.	EFFECTIVITY GAEC UNIT NO.	EFFECTIVITY SUB CONTR UNIT NO.
LM		LM-1 (31)	
		LM-2 (32)	
		LM-3 (33)	

DRAWING CHANGE REQD REVISE DWG	RECORD EO	DISPOSITION OF PARTS REWORK	SCRAP
✓		✓	

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
APPROVED BY	WT			~	JFJ	JFJ	DAM	
DATE	5/8/67			—	5-9-67	5-9-67	5-12-67	-9-67
1	VDI							

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SUPPORT ASSEMBLY A/S M/S ENG. MT. VIBRATION AMPL.	LDW280-11063	C3

ISSUED BY F. STEINMETZ X6510 SECTION VDI GROUP NO. 335 PL 5

01 NAS 9-1100

LDW280-11064 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28051	LEM-2(32)	2 EA
LEM	LDW280-28051	LEM-1(31)	2 EA

PART NO. LDW280-11064-19

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28051	LEM-2(32)	4 EA
↕	↕	LEM-1(31)	4 EA
LEM	LDW280-28051	LTA-8(18)	4 EA

PART NO. LDW280-11064-9

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28051	LEM-2(32)	2 EA
↕	↕	LEM-1(31)	2 EA
LEM	LDW280-28051	LTA-8(18)	2 EA

PART NO. LDW280-11064-3,-15 & -17

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28051	LEM-2(32)	1 EA
↕	↕	LEM-1(31)	1 EA
LEM	LDW280-28051	LTA-8(18)	LFA

PART NO. LDW280-11064-1,-7,-11 & -13

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED		GRUMMAN REL INFO A	
LAST DASH NO. USED	-19	PRIM NO. 215	LE(001) MP-A 7.6.6X

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	J.CALANDRA 4/6/66		
LAYOUT BY	J.CALANDRA 4/6/66		
CHECKED BY			
GR LEADER	J.PUSATERI 4/6/66		
VEH DES INT	W.P.BISCHOFF 4/6/66		
STRUCTURES	EB BW 4/6/66	PROJ ENGR	J.ALBER 4/8/66
STRUCTURES	HILDERMAN 4/7/66	REL GROUP	A.CAMARANICA 4/9/66
WEIGHTS	D.ROBESCH 4/8/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DOUBLER
ASCENT STAGE~CABIN EQUIPMENT
LINE SUPPORTS

SIZE	CODE IDENT NO.		
B	26512	LDW280-11064	A
SCALE	NONE	SHEET 1.00 OF 4	

THIS DWG SUPERSEDES LDW280-11064 "NO CHANGE" 4/6/66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE LAST REV NO CHANGE SH 1.00 OF 4 WAS SH 1 OF 1	HERB.SCHWETER		6-17-66			
A	1	1.00 1.10 2.00 3.00						EO A 1	IN B/M, F/D & M/B REMOVED LDW280-11064-5	LEM-2(32)		-5	HERB. SCHWETER 6-17-66	[illegible]	[illegible] 7-1966
	2							EO A 2	IN M/B ADD LDW280-11064-15 & -17 (2) EA REQD LTA-8, LEM-1 & -2. IN F/D & B/M ADD LDW280-11064-15 & -17	LEM-1(31) LTA-8(18)	NOT	REQD			
	3							EO A 3	IN F/D & B/M ADD LDW280-11064-19, 2 EA FOR LEM-1 & -2 D.J.	LEM-2(32) LEM-1(31)					

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-11064	A
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11064-19	E	DOUBLER	AL ALY SH	QQ-A-250/4	2024-T3	.032 × 7/8 × 4 3/8	NONE	76	
		-17						.032 × 1 × 3 1/4			
		-15						.032 × 1 × 3 5/8			
		-13						.032 × 7/8 × 4 7/8			
		-11						.032 × 7/8 × 1 3/4			
		-9						.032 × 7/8 × 5 3/4			
		-7						.032 × 7/8 × 8 3/4			
		-3						.032 × 7/8 × 4 1/8			
		LDW280-11064-1	E	DOUBLER	AL ALYSH	QQ-A-250/4	2024-T3	.032 × 7/8 × 4 5/8	NONE	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11064	A

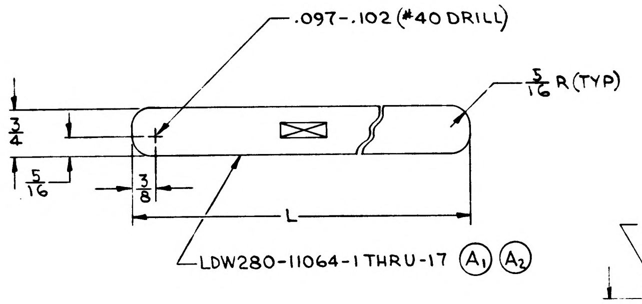
SCALE NONE

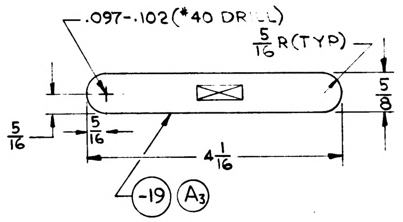
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100





PART NO.	L ± 1/32
LDW280-11064 -1	4 7/16
-3	3 15/16
-7	8 9/16
-9	5 5/8
-11	1 5/8
-13	4 11/16
-15	3 3/8
LDW280-11064-17	3

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE EDGE DISTANCE IS 1 1/2 FASTENER DIA FROM FASTENER ℄	✓
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	C	26512	LDW280-11064	A
	SCALE FULL		SHEET 3	

LDW280-11064 A

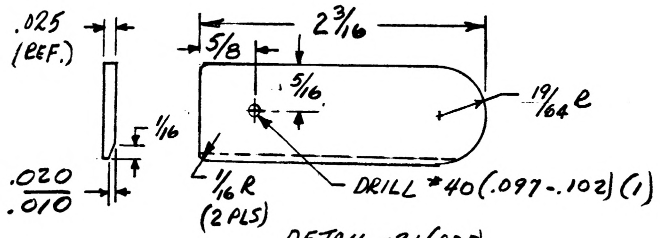
NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11064 | EO NO. B1
CONTROL INFO NO. LDW280-8502

IN F/D, B/M & M/B ADD -21 (1) REQD N/A LDW280-53049 FOR LEM 3 ONLY



DETAIL -21 (ADD)

MAT. .025 × 3/4 × 2
AL ALLOY 7075-T6, QQ-A-250/12
FINISH 88
1 & T = E

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: STRESS REQM'T

DESCRIPTION OF EO: ADDED -21

GAEC EO RELEASE: X LE 7-13-66

MODEL	EFFECTIVITY PROCURING ACTIVITY NO.	EFFECTIVITY GAEC UNIT NO.	EFFECTIVITY SUB CONTR UNIT NO.
LEM		LEM 3 (33)	

DRAWING CHANGE REQD REVISE DWG	DRAWING CHANGE REQD RECORD EO	DISPOSITION OF PARTS REWORK	DISPOSITION OF PARTS SCRAP
✓		—	—

	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY	JOP ES.				BW			
DATE	7-11-66				7-11		14 July	7-13-66

PRIORITY: C

DRAWING TITLE: DOUBLER ASCENT STAGE - CABIN EQUIPMENT LINES SUPPORTS

DRAWING NO.: LDW280-11064

EO NO.: B1

ISSUED BY P. Abrams X1441 SECTION VDI GROUP NO. 335 PL 35

01

NAS 9-1100

LDW280-11066

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW380-28050	QUAL. TEST	2 EA
LEM	LDW280-23246	LEM-6(36)	1 EA
LEM	LDW280-23246	LEM-5(35)	1 EA
LEM	LDW280-23246	LEM-4(34)	1 EA
LEM	LDW280-23246	LEM-3(33)	1 EA
LEM	LDW280-23246	LTA-3(13)	1 EA.

PART NO.	GAEC SCH NO.
LDW280-11066-11&-12	31-3

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED —
LAST DASH NO. USED -12

GRUMMAN REL INFO
PRIM NO. 215
4E(001) MP12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.010 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM NO. 1
DOCUMENTATION TYPE II

DRAWN BY F. CURASI 4-6-66
RELIABILITY
LAYOUT BY —
CHECKED BY
GR. LDR. G. Pusateri 4/6
WEH DES INT 4/9
STRUCT. 4/11
STRUCT. Hildesman 4/11
WEIGHTS Lamont 4-13
PROJ ENGR 4-13-66
REL GROUP C. Caramanico 4-15-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP
A/S - CABIN - F/F - S-BAND ANTENNA

SIZE B
CODE IDENT NO. 26512
LDW280-11066
SCALE NONE
SHEET 1.00 OF 3.00

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11066-12	E	CLIP	AL. ALLOY SHT.	QQ-A-283	7075	.040 × 2½ × 2⅝	T6	88	
								LDW280-11066-11	E	CLIP	AL. ALLOY SHT.	QQ-A-283	7075	.040 × 2½ × 2⅝	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T6	AL. HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

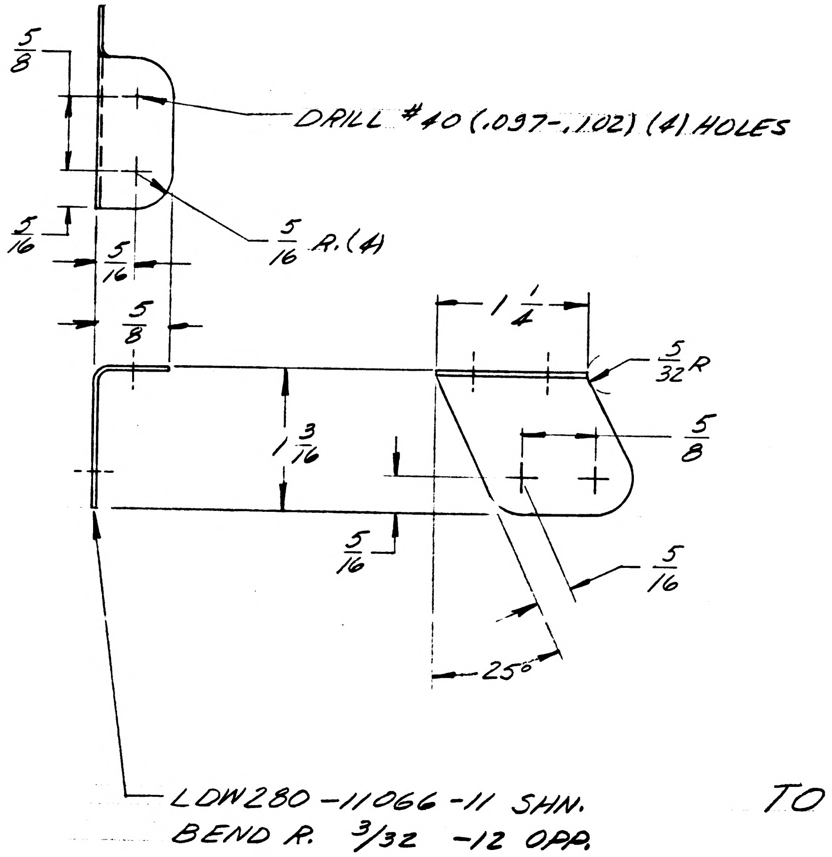
SIZE B | CODE IDENT NO. 26512 | LDW280-11066

SCALE NONE | SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


5/8
DRILL #40 (.097-.102) (4) HOLES
5/16
5/16 R. (4)
5/16
5/8
1 1/4
5/32 R
1 3/16
5/8
5/16
5/16
25°
LDW280-11066-11 SHN.
BEND R. 3/32 -12 OPP.

TO BE REDRAWN ON PRODUCTION FORMAT

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11066

SCALE FULL

SHEET 3.00

ENG 73.1 6-64

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 526
CONTROL INFO NO. LDW280 A5914

TO THE FOLLOWING DRAWINGS LISTED BELOW & THEIR DASHNUMBERS* THAT ARE EFFECTIVE ON LM-6(36) ADD EFFECTIVITIES FOR LM-7(37) LM-8(38), LM-9(39), LM-10(40), LM-11(41), LM-12(42), LM-13(43), LM-14(44), LM-15(45). QUANTITIES & N/A REMAIN THE SAME AS LM-6(36.)

DRAWING No	DASH No*	CHG NO.	TITLE	NEXT ASSY
LDW280-10245	-17, -19	C4	ANGLE CAB. L.H WIND	LDW280-23074
-10261	-13,-15,-17,-19,-21	C1	CHAN. M/S BEAM	-54030
-10300	-13, -15	D2	CLIP RH Z0 FRM LWR	-54020
-10310	-15	D1	CHAN CAB. WIND AREA	-23074
-10380	-15	C1	SHIM FWD HATCH HINGE	-54083
-10561	-11	A1	WEB M/S EME SPT. FWD	-23077
-10702	-17	A1	DBLR DOCK TUN.	-23069
-10830	ULTRA SONIC STD. PANELS	B1	FHS. PROC-RCS-HE MDU	H23143
-10833	-11, -13, -15	B2	WEB ECS HEAT EXC SPT	-23253
-10904	-11, -13, -17	C3	SUPT IMU BEAM WIRING	-23031
-23168	-1, -3, -5 & -7	A2	HATCH ASSY DOCK TUNNEL	-23069
M-23139	-1	B1	VEE ASSY CAB NVP - LAP	-23066
-11066	-11, -12	A1	CLIP S BAND ANTENNA	-23246
-11110	-11	C1	FTG AEB CAGE STRUT	-23039
-11117	-17, -19	B1	CHANNEL X253 DECK	-23029
-11117	-11, -13 & -15		CHANNEL X253 DECK	-53476
-11159	-15, -17, -18	B2	ZEE SHIELD X253.5	-53476
-11191	-11	C1	SUPT F.F. EQUIP LINES	-54075
-11351	-1 & -3	B2	BRACKET ASSY	-23488
-53078	-1	A7	BEAM INSTL MS Z10.25	-54012
H23903	-5	C4	SKIRT ASSY OXID	LDW280-23901
M10555	-1, -2	A1	CLIP LONGERON CABIN	-23048
-28753	-1	A4	SKIN ASSY DS SC	-28750
-23066	-1	B4	FR IN CAB N/A BAS SUP	-54002
-23511	NONE	B3	JIG DATA - REF DWG.	NONE
M11108	-1	B1	BOLT Z0 R.H SHIELD SUP.	-51199
-25709	-1	A2	SHIELD INSTL DS EC	-25661
-28362	-3	A2	STRAP ASSY CABIN	-54357
-28645	-3	A2	ACCESS COV INST PLSS	-54553

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH* ADDED LM-7(37) THRU LM-15(45) EFF.

Ⓡ GAEC EO RELEASE: 3 C JK 3/27/7

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
LM		LM-7(37) THRU	LM-15(45)	C	NOTED	LEO 280	526

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK / SCRAP: NOT REQD

APPROVED BY		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
DATE	3/16/67			—	3.20		3.23.67	3/24/67
6	VOI							

ISSUED BY A. MAICA X1392 SECTION VEH. DES. INTRF GROUP NO. 385 PL 35

01
NAS 9-1100

LDW280-11067 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-54281	CALTEST(70)	1
LEM	LDW280-54281	LM-15(45)	1
		THRU	
LEM	LDW280-54281	LM-4 (34)	1

PART NO. LDW280-11067-17 | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW-280-23281	LEM-3(33)	1
LEM	LDW-280-23281	LEM-2(32)	1

PART NO. LDW 280-11067-15 | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23296	LEM-15(45)	1 EA.
		THRU	
LEM	LDW280-23296	LEM-7(37)	1 EA
LEM	LDW280-23296	LEM-6(36)	1 EA
LEM	LDW280-23296	LEM-5(35)	1 EA
LEM	LDW280-23296	LEM-4(34)	1 EA
LEM	LDW280-23296	LEM-3(33)	1 EA
LEM	LDW280-23296	LEM-2(32)	1 EA
LEM	LDW280-23296	LEM-1(31)	1 EA
LEM	LDW280-23296	LTA-8(18)	1 EA
LEM	LDW280-23296	LTA-3(13)	1 EA

PART NO. LDW280-11067-11 & -13 | GAEC SCH NO. 32-5

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00	4.00				
REV	B	B	B	B	B				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL^c INFO B	
LAST DASH NO. USED	-17	PRIM NO. 215	
		JK(001)	ME-3B 11/25/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
±1/32 ±.020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS-9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	T.FREDA 4-7-66	RELIABILITY	
LAYOUT BY	VALENTINE 4-5-66		
CHECKED BY	D.FASS 4-12-66		
GRP LEADER	4/12/66		
VEH DES INT	4-12		
STRUCTURES	ES GW 4/12	PROJ ENGR	4-8-66
STRUCTURES	Hilderman 4/12	REL GROUP	A. Caramanico 4-12
WEIGHTS	4/16		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE - MID SECTION X310.5 DECK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11067	B
SCALE	NONE	SHEET 1.00 OF 5	

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00,1.10 3.00						EO A1 Ⓐ	IN FIELD FOR-11 REMOVED 4 HOLES. ADDED SH 1.10. SH 1 OF 4 WAS 1 OF 3	LTA-3(13),LTA-8(18) LEM-1 THRU -6	✓		EOM POTTINGER 9 JULY66		
B	1.	1.00,1.10						LE0280-296	FOR-11 & -13, ADD LM-7 THRU LM-15 EFF.	LM-7 THRU LM-15	NOT	REQ'D	E. COX 11-10-68		
	2.	1.00,1.10 2.00 4.00					✓	EO B2 LCD 1860	ADDED-15, ADDED SHEET 4.00	LM-2 THRU LM-15	NOT	REQ'D			
	3	1.10, 3.00					✓	EO B3	REMOVED .127-.133 (#30 DRILL) (2-HOLES)	LM-7 THRU LM-15	✓				
	4	1.10,3.00					✓	EO B4	REF. E.O. B3: PART NUMBER S/B -11	LM-7 THRU LM-15	✓ -11				
	5	1.0,1.10		C		✓		EO B5 LCD 1809 CCA 632	IN M/B ON-15, LM-4(34) THRU LM-15(45), REMOVED N/A LDW280-23281 1/VEH & ADDED N/A LDW280-54281, 1/VEH.	LM-4(34) THRU LM-15(45) QUAL TEST(70)	NOT	REQ'D			
	6	1.0 1.10 2.00,4.00					✓	EO B6 Ⓔ	REF. E.O. B5, CREATED -17 EFFECTIVITY LM-4 (34) THRU LM-15 (45), QUAL TEST (70)	LM-4(34) THRU LM-15(45) QUAL TEST(70)	✓		R.C.G.		

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURE	STRUCTURE	WEIGHTS	RELIABILITY				
B										

ENG 77.16 3-66

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11067	B Ⓑ
SCALE NONE		SHEET 1.10	

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11067-17	E	DOUBLER	AL ALLOY SH.	QQA-250/12	7075 -T6	.045 x 5 x 5	NONE	88	
		LDW280-11067-15	E	DOUBLER	AL ALLOY SH	QQ-A-250/12	7075 -T6	.045 x 5 x 5	NONE	88	
		LDW280-11067-13	E	BRACKET	AL ALLOY SH	QQ-A-250/12	7075	.056 x 3 1/8 x 5 3/4	T6	88	
		LDW280-11067-11	E	BRACKET	AL ALLOY SH	QQ-A-250/12	7075	.056 x 3 1/4 x 5 3/4	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H- 6088
						88	ANODIZE	LSP-14-9030

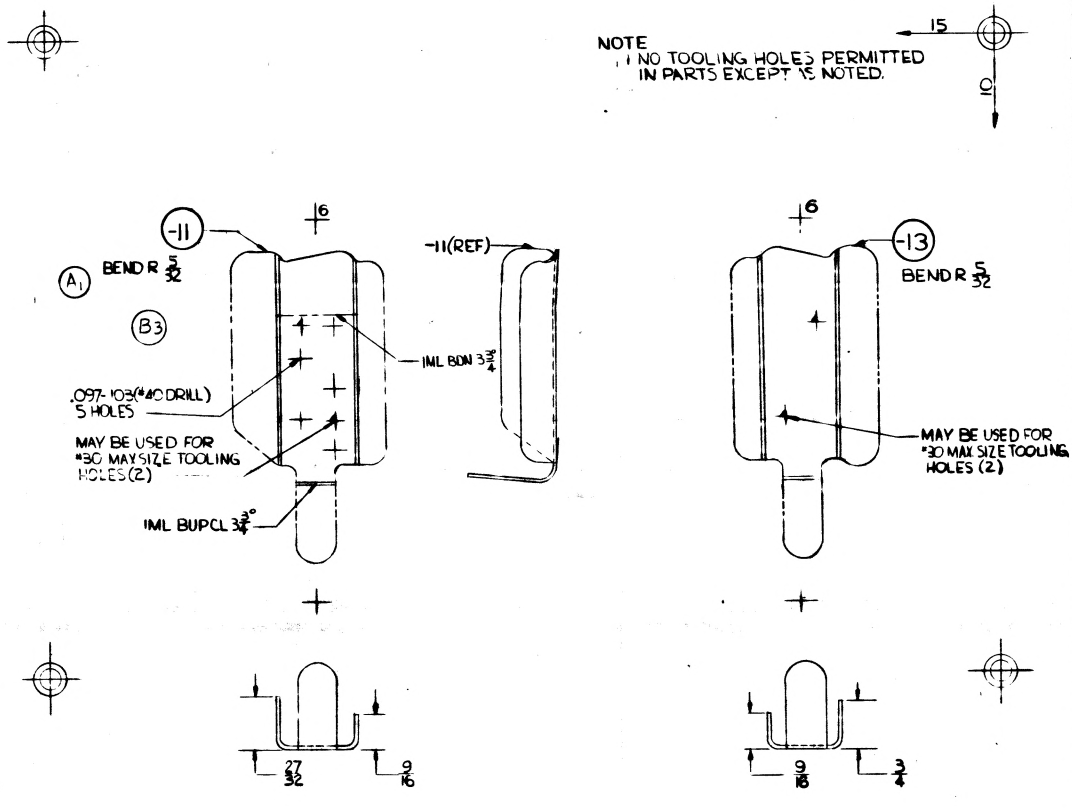
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11067	B (B)
SCALE NONE			SHEET 2.00

01

NAS 9-1100


15
10
6
-11
A1
BEND R 5/32
B3
-11(REF)
IML BDN 3 3/4
.097-.103(#40 DRILL)
5 HOLES
MAY BE USED FOR
#30 MAY SIZE TOOLING
HOLES (2)
IML BUPCL 3 3/4°
6
-13
BEND R 5/32
MAY BE USED FOR
#30 MAX SIZE TOOLING
HOLES (2)
27/32
9/16
9/16
3/4

NOTE
1 NO TOOLING HOLES PERMITTED IN PARTS EXCEPT AS NOTED.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-1/2 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.030	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

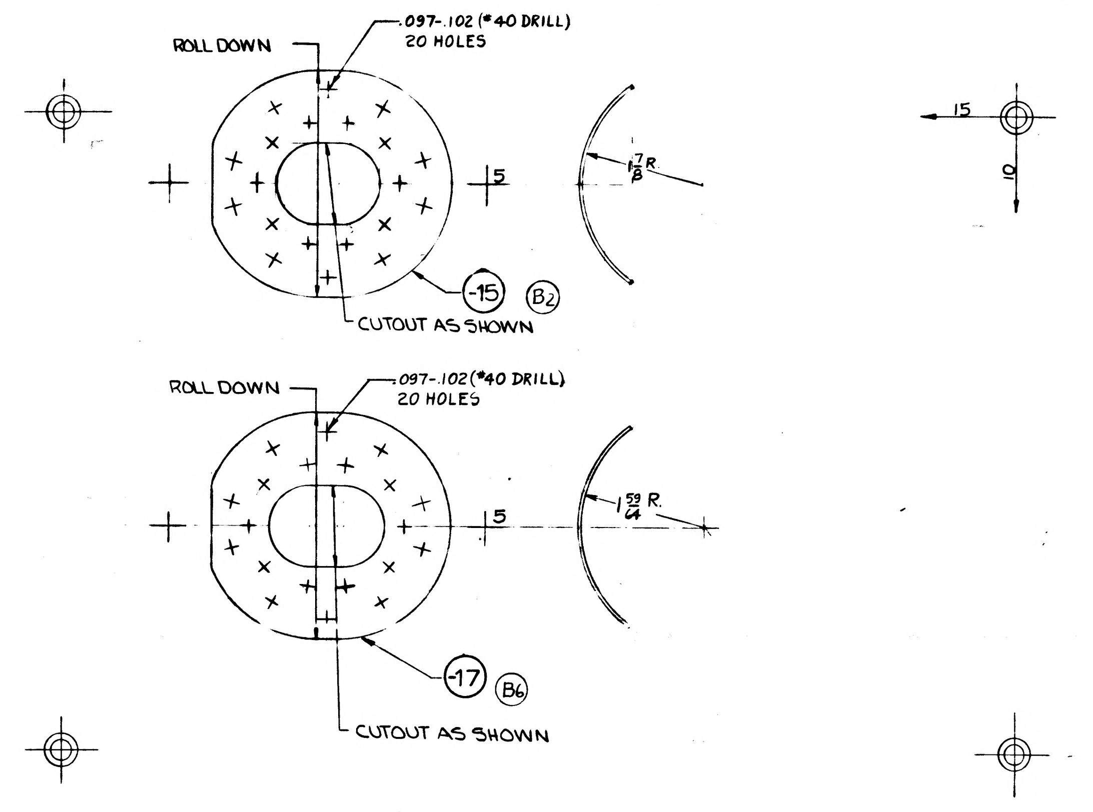
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

LEM	SIZE C	CODE IDENT NO. 26512	LDW280-11067	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

4 3 2 FOR PHOTO REPRODUCTION 1 K2

01 NAS 9-1100

TRAMOK
T.S 7-17-68


ROLL DOWN
.097-.102 (#40 DRILL)
20 HOLES
5
$1\frac{7}{8}$ R.
-15
B2
CUTOUT AS SHOWN
15
10
ROLL DOWN
.097-.102 (#40 DRILL)
20 HOLES
5
$1\frac{59}{64}$ R.
-17
B6
CUTOUT AS SHOWN

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

LEM	SIZE C	CODE IDENT NO. 26512	LDW280-11067	B
MODEL OR END ITEM	SCALE FULL		SHEET 4.00	

FOR PHOTO REPRODUCTION

K2

LDW280-11067 B

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 1210
CONTROL INFO NO. LDW280B6151

TO THE FOLLOWING *DASH NO.S OF DWGS LISTED ADD TO M/B TEST (75).

DWG NO	TITLE	DASH *	QUANTITY	N/A **	E.O. #
LDW280-10961	ZEE A/S-M/S (S-BAND STEERABLE ANT.)	-13 & -14	1 EA	LSK280-11193	A4
LDW280-11067	BRACKET A/S-M/S X310.5 DECK	-11 & -13	1 EA	LSK280-11193	C1

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓

LCD 3428 CCH 1560 Fin #1

REASON FOR EO: CERTIFICATION OF DOCKING TUNNEL COMPONENT STRUCTURE FOR DROGUE LOADS

DESCRIPTION OF EO: IN * MOD BLOCK ADDED TEST (75) N/A **

GAEC EO RELEASE: 11/11/68

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		TEST (75)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK NOT REQ'D SCRAP

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY				FDL/gV	CW			
DATE	11/7/68			11/7/68	11/7/68		11/7/68	11/11/68

PRIORITY: C
DRAWING TITLE: SEE ABOVE
DRAWING NO.: LEO 280
EO NO.: 1210

11-5-68
ISSUED BY P. WEISSLITZ x86048 SECTION VDI GROUP NO. 335 PL 25

01 NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 1316
CONTROL INFO NO. LDW280B6833

TO *DASH Nos OF DRAWINGS LISTED BELOW RESTRICT TO LM4(34) THRU LM14(44)
WAS LM4(34) THRU LM15(45)

DWG #	TITLE	* DASH #	QUANTITY	N/A	EO#
LDW280P11056	CONE ASSY A/S-M/S S-BAND STEERABLE ANTENNA	-15	1	LDW280-54281	D1
LDW280P11057	CONE ASSY A/S-M/S S-BAND STEERABLE ANTENNA	-5	1		B3
LDW280-11067	BRACKET A/S-M/S S-BAND STEERABLE ANTENNA	-17	1		C2
LDW280M10875	TUBE A/S-M/S S-BAND STEERABLE ANTENNA	-5	1		B7
LDW280M11375	FITTING A/S-M/S S-BAND STEERABLE ANTENNA	-13	1		B1
LDW280M11376	FITTING ASSY A/S-M/S S-BAND STEERABLE ANTENNA	-11	1		A4
LDW280M10867	CAP A/S-M/S S-BAND STEERABLE ANTENNA	-3	1	LDW280-54281	B4
LDW280-16024	BRACKET A/S-M/S S-BAND STEERABLE ANTENNA	-17	1	LDW280-23296	C4
LDW280-54281	STRUT ASSY A/S-M/S S-BAND STEERABLE ANTENNA	-3	1	LDW280-23256	B5
LDW280-23256	SUPPORT INST'L A/S-M/S S-BAND STEERABLE ANTENNA	-5	1	LDW280-54002	D2

DETAIL SPEC REQ ☐	CL II ENGRG CHG ☐	CL I ENGRG CHG ✓	LCD 3587 PKG#11

REASON FOR EO: ELIMINATION OF EQUIP ON THE LM15 A/S

DESCRIPTION OF EO: IN MOD BLK FOR * RESTRICTED TO LM4(34) - LM14(44) WAS LM4(34) - LM15(45)

(5) GAEC RELEASE 3-24-69
(12) SK 3/-69

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM15(45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS										
REVISE DWG	RECORD EO	REWORK	SCRAP	APPROVED BY				FDR				
✓			✓	DATE	3/6/69			3/6/69	3/ /69		3/20/69	3-26-69
					VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT C

PRIORITY: C
DRAWING TITLE: SEE ABOVE
DRAWING NO.: LEO 280
EO NO.: 1316

4-11-69 ISSUED BY P. WEISSLITZ x8601,9 SECTION VDI GROUP NO. 335 PL 25

01
NAS 9-1100

LDW280-11068 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-54205	LEM-6(36)	2
	LDW280-54205	LEM-5(35)	2
	LDW280-54205	LEM-4(34)	2
	LDW280-28205	LEM-3(33)	2
		LTA-3 (13)	2
		DES TEST	1
		LTA-8 (18)	2
		PA-1	2
		LEM-2(32)	2
LEM	LDW280-28205	LEM-1 (31)	2

PART NO. LDW280-11068-15 — GAEC SCH NO. 45

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LTM280-26815	LTA-1 (11)	4
	LDW290-54205	LEM-6 (36)	4
	LDW280-54205	LEM-5 (35)	4
	LDW280-54205	LEM-4 (34)	4
	LDW280-28205	LEM-3 (33)	4
		LTA-3 (13)	4
		DES TEST	1
		LTA-8 (18)	4
		PA-1	4
		LEM-2 (32)	4
LEM	LDW280-28205	LEM-1 (31)	4

PART NO. LDW280-11068-13 — GAEC SCH NO. 45

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LTM280-26815	LTA-1 (11)	2
	LDW280-54205	LEM-6 (36)	2
	LDW280-54205	LEM-5 (35)	2
	LDW280-54205	LEM-4 (34)	2
	LDW280-28205	LEM-3 (33)	2
		LTA-3 (13)	2
		DES TEST	1
		LTA-8 (18)	2
		PA-1	2
		LEM-2 (32)	2
LEM	LDW280-28205	LEM-1 (31)	2

PART NO. LDW280-11068-11 — GAEC SCH NO. 45

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A		
LAST DASH NO. USED	-15	PRIM NO.	LE(001)	
		215	MP-A	8-8-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
$\pm\frac{1}{64}$ ±.010 ±½°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100 — LINE ITEM 1 — DOCUMENTATION TYPE II

DRAWN BY	VALENTINE 4/5/66	RELIABILITY	
LAYOUT BY	VALENTINE 4/5/66		
CHECKED BY			
GRP LDR	PHILLIPS 4/9/66		
VEH DES INT	W.BISCHOFF 4/8/66		
STRUCTURES	HILDERMAN 4/9/66	PROJ ENGR	ALBER 4/12/66
STRUCTURES	A.J.P., J.V., F.E.B.	REL GROUP	BOTTI 4/14/66
WEIGHTS	ROBESCH 4/12/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE-MID SECT-PROP. PRESS. LINE SUPPORT

SIZE	CODE IDENT NO.		
B	26512	LDW280-11068	A
SCALE	NONE	SHEET 1 OF 4	

ENG 77.1 12-65

SUPERSEDES LDW280-11068 LAST REV "NO CHG" 13 JULY 66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
									REDRAWN NO CHANGE. LAST REV "NO CHG" ADDED SH 1.00, 1.10, 2.00 & 3.00 SH 1 OF 4 WAS 1 OF 1 POTTINGER 13 JULY 66						
A	1	1.00, 1.10						E.O. A1	IN-13 MOD. BLK. (4) REQD WAS (2) ON LTA-1, LTA-3, LTA-8, LEM-1 THRU LEM-6 & PA-1	NOTED	✓		POTTINGER 13 JULY 66	8-3 RVP	
	2	1.00, 1.10 2.00, 3.00						E.O. A2	ADDED -15	DES TEST PA-1, LTA-3, LTA-8 LEM-1 THRU -6	NOT	REQD			
	3	1.00							IN-11, -13 & -15 MOD. BLK. LDW280-28205 ON LTA-3 & LEM-3 AND LDW280-54205 ON LEM-4, LEM-5 & LEM-6 WAS LDW280-23205	LTA-3, LEM-3 THRU LEM-6	NOT	REQD	VALENTINE 8-3-66	RMC EV	8-17-66

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURE	STRUCTURE	WEIGHTS	RELIABILITY					
	A	—	RVP 8-3-66									

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11068	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11068-15	E	BRACKET	AL ALLOY EXTR	QQ-A-200/3	2024-T3511	DIE #22637 × 7/8		88	
		LDW280-11068-13	E	PLATE	AL ALLOY SH	QQ-A-250/12	7075-T6	.050 × 1½ × 1½		88	
		LDW280-11068-11	E	BRACKET	AL ALLOY EXTR	QQ-A-200/11	7075-T6511	DIE #65332 × 1½	FP, CM	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030
						FP	ZYGLO	MIL-I-6866
						CM	CHEM MILL	LSP-14-26100

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11068	A

SCALE NONE
SHEET 2.00

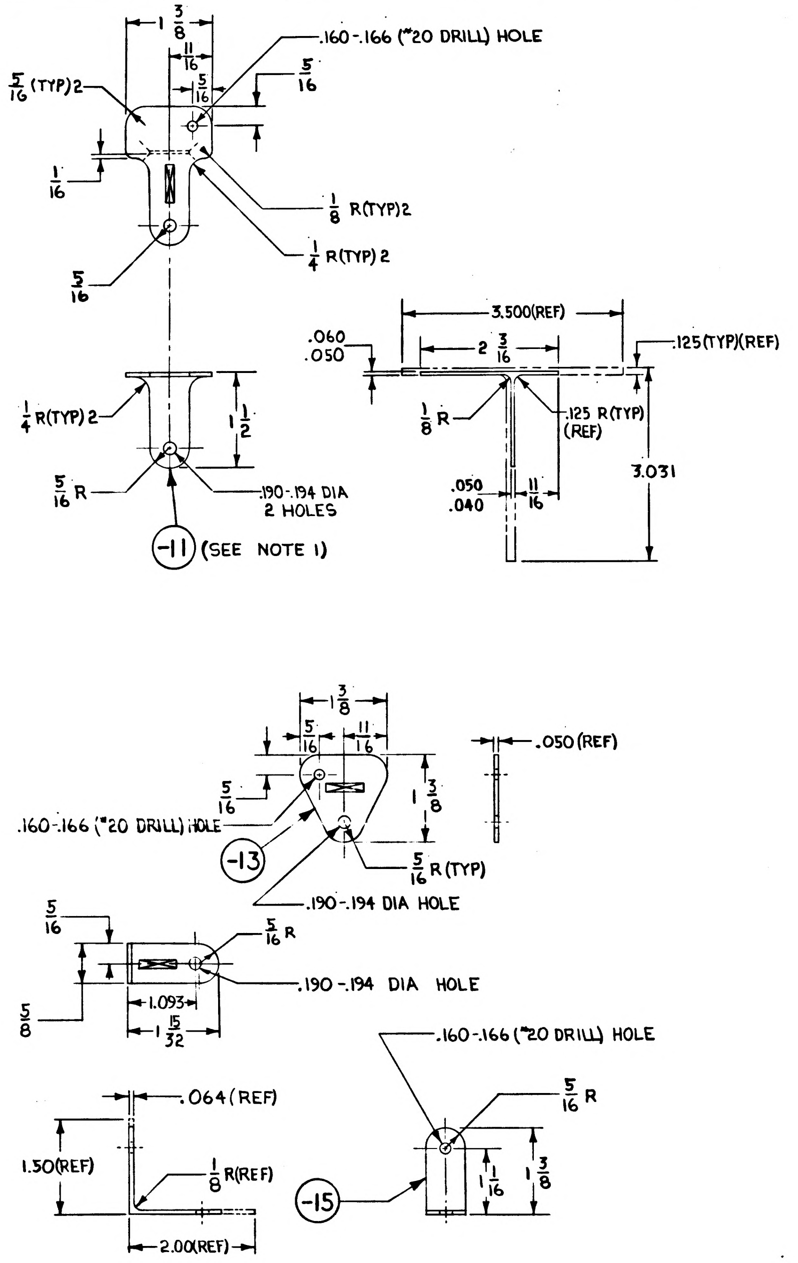
ENG 77.2 7-65

01

NAS 9-1100

LDW280-11068 A

NOTES:
1. -11 TO BE CHEM-MILLED. OPTIONAL METHOD OF MANUFACTURING IS MACHINING



1 3/8
11/16
5/16
.160-.166 (#20 DRILL) HOLE
5/16
5/16 (TYP) 2
1/16
1/8 R(TYP) 2
1/4 R(TYP) 2
5/16
3.500(REF)
.060
.050
2 3/16
.125(TYP)(REF)
1/4 R(TYP) 2
1 1/2
1/8 R
.125 R(TYP) (REF)
3.031
5/16 R
.190-.194 DIA 2 HOLES
.050
.040
11/16
-11 (SEE NOTE 1)
1 3/8
5/16
11/16
.050 (REF)
5/16
1 3/8
.160-.166 (#20 DRILL) HOLE
-13
5/16 R (TYP)
.190-.194 DIA HOLE
5/16
5/16 R
.190-.194 DIA HOLE
5/8
1.093
1 15/32
.160-.166 (#20 DRILL) HOLE
.064 (REF)
5/16 R
1.50(REF)
1/8 R(REF)
-15
1 1/16
1 3/8
2.00(REF)

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STMPPART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
$\overset{125}{\sqrt{}}$ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
$\overset{200}{\sqrt{}}$ FOR ALL DRILLED HOLES	✓
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	✓
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL $\sqrt{}$ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
D	26512	LDW280-11068	A

MODEL OR END ITEM | SCALE FULL | SHEET 3 00

LDW280-11068A

ENG 73.3 6-64

01 NAS 9-1100

24 *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280 EO NO. 296
CONTROL INFO NO. LDW280 A 0658

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS* THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10981	A1	SEE DRAWING
-11015	B1	
-11025	B1	
-11028	B4	
-11035	A2	
-11036	B1	
-11039	A1	
-11045	A1	
-11048	B1	
-11050	C1	
P11055	B2	
P11056	C2	
-11067	B1	
-11068	B1	
H11069	B1	
-11070	C1	
-11071	A1	
-11072	A1	
-11073	A2	
P11087	B1	
-11103	A1	
-11116	A1	
-11119	B1	
-11123	A2	
-11128	C1	
-11149	A1	
-11153	A1	
-11154	A2	
-11155	A1	
-11156	B1	
-11157	B2	
LDW280-11160	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.C.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC C EO RELEASE: 10-8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM-9(39)
LEM		LEM-10(40) LEM-11(41)	LEM-12(42)
LEM		LEM-13(43) LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

APPROVED BY		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
	DP			—				AC
DATE	9/23/66			—	9.9		10-6-66	10-3-66
	V.D.I.							

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LE0280
EO NO.: 296

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 3

01

NAS 9-1100

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NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 1135
CONTROL INFO NO. LDW280B5698

TO THE FOLLOWING DASH #'S OF DWGS LISTED BELOW
ADD EFF. TEST (75)

DWG #	TITLE	DASH# *	QUANTITY	N/A	E.O.#
LDW280-54205	PANEL ASSY A/S M/S PROP PRESS. MOD.	-1	1	LDW270-54201	E2
LDW280-10757	PLATE A/S - M/S PROP PRESS MOD	-13, -14, -19	1 EA	LDW280-54205	D3
LDW280-11904	PLATE A/S - M/S PROP PRESS MOD	-11, -13	1 EA	↑	A6
LDW280-11068	BRAKET A/S - M/S PROP PRESS. MOD	-11, -15 -13	1 EA 2	│	B3
LDW280-12073	PLATE A/S - M/S PROP PRESS. MOD.	-13	1	│	B1
LDW280M11208	FITTING A/S - M/S PROP PRESS. MOD	-11	1	│	A2
LDW280M10689	FITTING ASSY A/S - M/S PROP PRESS MOD.	-1	2	│	C4
LDW280M10915	MOUNT A/S - M/S PROP PRESS MOD	-1	1	│	B5
LDW280M10803	MOUNT A/S - M/S PROP PRESS. MOD	-1	1	↓	C6
LDW280M11271	FITTING A/S - M/S PROP PRESS. MOD	-11	1	LDW280-54205	B3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 3461 CCA1368 PKG #1

REASON FOR EO: INST'L OF SOLENOID VALVE P/N LSC270-713.19-2 INTO APS MODULE P/N LDW270-54201-9

DESCRIPTION OF EO: TO THE DASH #'S LISTED * ADD EFF TEST (75)

GAEC EO RELEASE (5)

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		(75) TEST	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK NOT REQ'D SCRAP
APPROVED BY / DATE:

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
APPROVED BY				JOR	GB		JAP	JM
DATE	10/3/68			10/2/68	10/3/68		10/7/68	10-8-68
	'DI							

PRIORITY C
DRAWING TITLE SEE ABOVE
DRAWING NO. LEO 280
EO NO. 1135

10-30-68
ISSUED BY P. WEISS LTR x86048 SECTION UDI GROUP NO. 280 PL 25

ENG 32.2 REV 3-65

LFM

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO-280
EO NO. 859
CONTROL INFO NO. LDW 280B 1790

** TO THE FOLLOWING DRAWINGS ADD OR REMOVE AS INDICATED

DRAWING No	DASH No*	NEXT ASSY	**		EFF	QTY	** ADD EFF	QTY	EO #	DWG TITLE	DISP OF PARTS
LDW 280- 11904 -	-11	LDW280-282)5	ADD EFF		PA-1(47)	2	DMSM	1	A4	PLATE	NOT REQD
	-13					2		1			
	-21					2		1			
	-23					2		1			
	-25					2		1			
LDW 280- 11904 -	-27		ADD EFF			2		1		PLATE	
LDW 280- 10757 -	-13		REVISED QTY 2EA WAS 1EA					1	D2	PLATE	
	-14						DMSM	1			NOT REQD
	-15		REMOVE EFF			1					SCRAP
	-16					1					
	-17					1					
	-18		REMOVE EFF			1					SCRAP
	-19		ADD EFF			2	DMSM	1			NOT REQD
LDW 280- 10757 -	-21		ADD EFF		PA1(47)	2	DMSM	1		PLATE	
			REV. QTY	WAS	EFF						
LDW280H-28204	-3		2	1	PA1(47)		DMSM	1	D1	PANEL ASSY	
LDW280H-28204	-4		2	1				1		PANEL ASSY	
LDW280M10689	-1		8	4				4	C3	FITTING ASSY	
LDW280M10690	-1		4	2				2	B3	FITTING	
LDW280M11271	-11		2	1				1	B2		
LDW 280 M11272	-11		2	1				1	B1		
LDW 280 M10697	-1		4	2				2	C1		
LDW 280 M10698	-1		2	1				1	B7	FITTING	
LDW 280 M 10699	-1		4	2				2	B3	HOUSING	
LDW280M 10803	-1		4	2				2	C4	MOUNT	
LDW 280M 10915	-1		2	1				1	B4	MOUNT	
LDW 280M 10915	-2		2	1				1		MOUNT	
LDW 280-11068	-11		4	2				2	B2	BRACKET	
	-13		8	4				4		PLATE	
LDW 280-11068	-15		4	2				2		BRACKET	
LDW280M11120	-1		4	2				2	B1	FITTING LH	
LDW 280M 11121	-1		2	1				1	B1	FITTING RH	
LDW280M 11121	-3	LDW 280-28205	2	1			DMSM	1		FITTING	
LDW 280M 11337	-11	LTM 280-25136	ADD EFF		PA1(47)	1			A2	FITTING	
LDW 280-53921	-1	LTM270-50005				1			A4	SUPPORT INSTL	
LDW 280-11908	-11	LDW280-53921				1			A1	SHIM	
LDW280P11906	-11					2			A1	PLATE	
LDW 280M11357	-11					1			A1	PLATE	
LDW 280M 11358	-11	LDW 280-53921	ADD EFF		PA-1(47)	2			A1	BUSHING	NOT REQD

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LED 2019 CCA667 PKG # 6 (5)

REASON FOR EO
1. LM-3(33) UP DATE FOR PA-1(47)
2 SUPPLY ADDITIONAL PARTS FOR WSTF EXTENDED TEST PROGRAM

DESCRIPTION OF EO
ON DASH *(**)

GAEC EO RELEASE C
VK 2/7/68

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM-50	PA-1 (47)	
LM		DMSM(77)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOTED (REWORK / SCRAP)

	VDI	PROPULSION	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	REL
APPROVED BY		Perretti			CW			
DATE	2/4/68	2/4/68		2-2-68	2-2-68		2/4/68	2/7/68

PRIORITY C
DRAWING TITLE NOTED ABOVE
DRAWING NO. LEO-280
EO NO. 859

ISSUED BY J GRANDY X 7033 2/1/68
SECTION VDI
GROUP NO. 335 PL 25

01
NAS 9-1100

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP. CODE IDENT NO. 26512 **ENGINEERING ORDER**	DWG. NO. LEO 280	EO NO. 1319
	CONTROL INFO NO. LDW 280B6827	

ENG 22.2 REV 3-65

TO THE *DASH Nos LISTED OF THE FOLLOWING DWGS RESTRICT TO LM 4(34) THRU LM14(44) WAS LM4(34) THRU LM 15(45)

DWG #	TITLE	*DASH #	QUANTITY	N/A		EO#
LDW 280-12073	PLATE A/S - M/S PROP. PRESS. MODULE - PANEL	-13 & -15	1 EA	LDW 280-54205		B2
LDW 280-11904	PLATE A/S - M/S PROP. PRESS MODULE - PANEL	-11, -13 & -21-1 -23, -25 & -27	1 EA			B1
LDW 280-11068	BRACKET A/S - M/S PROP. PRESS. MODULE - PANEL	-13 -11 & -15	4 2 EA			B4
LDW 280-10757	PLATE A/S - M/S PROP. PRESS MODULE - PANEL	-19 & -21 -13, & -14	1 EA 2 EA			D4
LDW 280H28204	PANEL ASSY HONEYCOMB A/S - M/S PROP. PRESS MODULE	-3 & -4	1 EA	LDW 280-54205		D4
LDW 280M11156	BLOCK A/S - M/S PROP. PRESS MODULE	-1 & -2	4 EA	LDW 270-54201		B3
LDW 280-54205	PANEL ASSY A/S - M/S PROP. PRESS MODULE	-1 & -21	1 EA	LDW 270-54201		E4

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 3587 PKG #11

REASON FOR EO: ELIMINATION OF CERTAIN EQUIP. IN THE LM15 A/S

DESCRIPTION OF EO: IN MOD BLK FOR * RESTRICTED TO LM4(34) - LM14(44) WAS LM4(34) - LM15(45)

(5)

EO RELEASE: GAEC 3-24-69 Ⓡ JK

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM15 (45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			✓

APPROVED BY	[illegible]			[illegible]	[illegible]		[illegible]	[illegible]	
DATE	3/6/69			3/6/69	3/6/69		3/20/69	3-26-69	
	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE ABOVE	LEO 280	1319

4-15-69
ISSUED BY P. WEISSLITZ x86048 SECTION VDI GROUP NO. 335 PL 75

LDW280-11070 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23030	LEM-6(36)	1 EA
		LEM-5(35)	1 EA
		LEM-4(34)	1 EA
		LEM-3(33)	1 EA
LEM	LDW 280-23030	LTA-3(13)	1 EA
PART NO. LDW280-11070-15 & -16		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28030	LEM-2(32)	1 EA
LEM	LDW280-28030	LEM-1(31	1 EA
LEM	LDW280-28030	LTA-8(18)	1 EA
PART NO. LDW280-11070-11 & -12		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23030	LEM-6(36)	1
LEM	LDW280-23030	LEM-5(35)	1
LEM	LDW280-23030	LEM-4(34)	1
LEM	LDW280-23030	LEM3(33)	1
LEM	LDW280-28030	LEM-2(32)	1
LEM	LDW280-28030	LEM-1(31)	1
LEM	LDW280-28030	LTA-8(18)	1
LEM	LDW280-23030	LTA-3(13)	1
PART NO. LDW280-11070 -13		GAEC SCH NO. 32-5	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO	
LAST DASH NO. USED	-16	PRIM NO.	LE(001)
		215	MP-B 6-30-66

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ±1/32 ±.020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM #I | DOCUMENTATION TYPE II

DRAWN BY	T.FREDA 4-19-66	RELIABILITY	
LAYOUT BY	J.LEONARD 4-6		
CHECKED BY	4-21-66		
GR LEADER	4/25/66		
VEH DES INT	for W.R. BISCHOFF		
STRUCTURES	BW 4/25	PROJ ENGR	4-28
STRUCTURES	4/20	REL GROUP	5-2
WEIGHTS	Lamonte 4-28		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DOUBLER
ASCENT STAGE - MID SECTION
±Y22 BEAM REINFORCING

SIZE	CODE IDENT NO.		
B	26512	LDW280-11070	B
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	SH CHG LTR	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
												REWORK	SCRAP			
A	1	1.00,1.10, 2.00,3.00							EO A1	E.O. A1 INITIAL DWG RELEASE - PARTS MADE PER E.O.	LTA-3,-8 LEM-1,-2-3, -4,-5,-6	NOT	REQD	T.FREDA 4-19-65		
B	1	1.00,1.10 2.00,3.00							EO B1	ADDED -15 & -16, RESTRICTED -11 & -12 TO LTA-8, LEM-1 & LEM2	LTA-3,-8 LEM-1-2-3-4 -5-6	✓		Coppola 6/14/66		
	2	1.10,3.00								REVISED TRIM OF -11-12-15 & -16	LTA-3,-8 LEM-1 2,-3,-4,-5,-6	✓		WW		

FOR CONTINUATION OF REVISIONS SEE SHEET

ENG 77.3 5-64

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B	CODE IDENT NO. 26512	LDW280-11070	B
SCALE NONE			SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11070-16	E	DOUBLER	AL ALLOY SH	QQ-A-250/12	7075	.080 X 5¼ X 6¼	T6	88	
		LDW280-11070-15	E	DOUBLER	AL ALLOY SH	QQ-A-250/12	7075	.080 X 5¼ X 6¼	T6	88	
		LDW280-11070-13	E	DOUBLER	AL ALLOY SH	QQ-A-250/12	7075	.032 x 5 x 6 7/8	T6	88	
		LDW280-11070-12	E	DOUBLER	AL ALLOY SH	QQ-A-250/12	7075	.080 x 5¼ x 6¼	T6	88	
		LDW280-11070-11	E	DOUBLER	AL ALLOY SH	QQ-A-250/12	7075	.080 x 5¼ x 6¼	T6	83	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

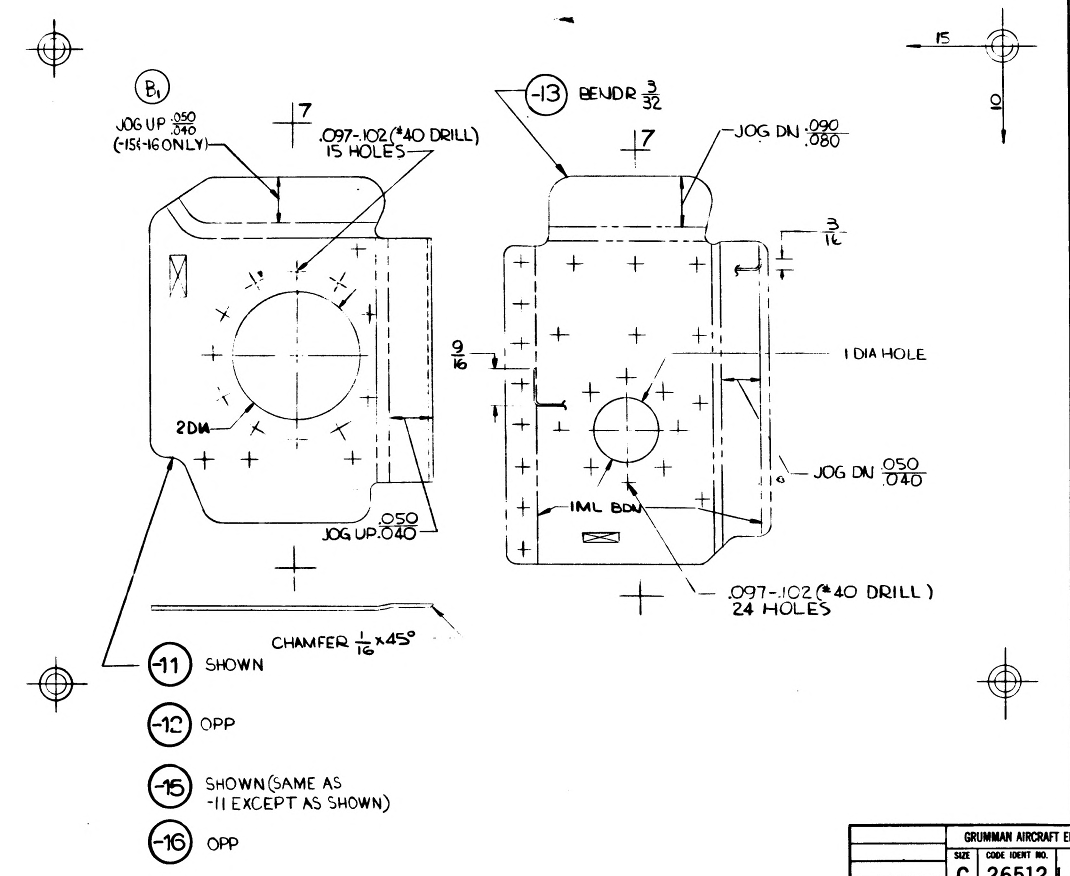
SIZE	CODE IDENT NO.		
B	26512	LDW280-11070	B
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTE
1. NO TOOLING HOLES PERMITTED IN PARTS.


B1
JOG UP .050/.040 (-15(-16 ONLY)
7
.097-.102 (#40 DRILL) 15 HOLES
2 DIA
.050 JOG UP .040
CHAMFER 1/16 x45°
-11 SHOWN
-12 OPP
-15 SHOWN (SAME AS -11 EXCEPT AS SHOWN)
-16 OPP
-13 BEND R 3/32
7
JOG DN .090/.080
3/16
9/16
1 DIA HOLE
JOG DN .050/.040
IML BDY
.097-.102 (#40 DRILL) 24 HOLES
15
10

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

LEM	SIZE C	CODE IDENT NO. 26512	LDW280-11070	B
MODEL OR END ITEM	SCALE FULL		SHEET 3 00	

FOR PHOTO REPRODUCTION 1 K2

LDW280-11070 B

LDW280-11070 B

NAS 9-1100

101

24 *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 30.2 REV 3-65

DWG. NO. LE0280
EO NO. 296
CONTROL INFO NO. LDW280 A 0658

*

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9 (39), LEM-10(40), LEM-11(41), LEM-12 (42), LEM-13 (43) LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10981	A1	SEE DRAWING
-11015	B1	
-11025	B1	
-11028	B4	
-11035	A2	
-11036	B1	
-11039	A1	
-11045	A1	
-11048	B1	
-11050	C1	
P11055	B2	
P11056	C2	
-11067	B1	
-11068	B1	
H11069	B1	
-11070	C1	
-11071	A1	
-11072	A1	
-11073	A2	
P11087	B1	
-11103	A1	
-11116	A1	
-11119	B1	
-11123	A2	
-11128	C1	
-11149	A1	
-11153	A1	
-11154	A2	
-11155	A1	
-11156	B1	
-11157	B2	
LDW280-11160	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.C.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE: E 10-6

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM 9(39)
LEM		LEM-10(40) LEM-11(41)	LEM-12(42)
LEM		LEM-13(43) LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D

APPROVED BY: DP
DATE: 9/23/66 V.D.I.

SUPPORT | RELIAB. GROUP | GROUP LEADER — | STRESS GROUP 9.9 | LIAISON ENGRG | PROJ ENGRG 10-6-66 | 10-3-66

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LE0280
EO NO.: 296

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 3

01 NAS 9-1100

LDW280-11071

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23335	LEM6 (36)	1
		LEM5 (35)	1
		LEM4 (34)	1
		LEM3 (33)	1
		LEM2 (32)	1
		LEM1 (31)	1
		LTA8 (18)	1
LEM	LDW280-23335	LTA3 (13)	1
PART NO. LDW280-11071-1		GAEC SCH NO. 31-1	

TO BE REDRAWN ON PRODUCTION FORMAT.

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED —1

GRUMMAN REF INFO

PRIM NO.	LE601		
215	MP12		RS 4/13

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
±1/64 ±.010 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II (3)

DRAWN BY	G. OLIVER —	WEIGHTS	4/14
LAYOUT BY	G. OLIVER 4/7/66	RELIABILITY	
CHECKED BY	—		
GRP. LEADER			
VEH. DES. INT	4/11		
STRUCTURES	4/12	PROJ ENGR	4-14-66
STRUCTURES	Hillerman 4/13	REL GROUP	4-16-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

FLAT SPRING
ASCENT STAGE, MID SECTION, UPPER HATCH - DOWNSTOP

SIZE B
CODE IDENT NO. 26512
LDW280-11071
SCALE NONE
SHEET 1.00 OF 3

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11071-1	E	FLAT SPRING	CARBON STEEL	MIL.S.7947	1095	·020× 1¾×2½	SEE NOTE.1.	SEE NOTE 4	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE.

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B

CODE IDENT NO. 26512

LDW 280-11071

SCALE NONE

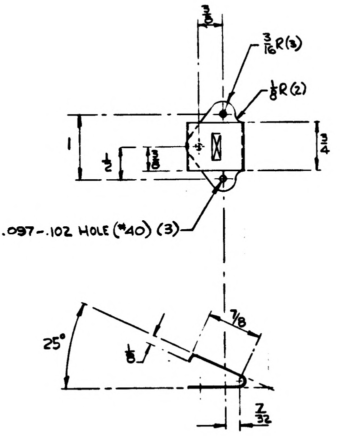
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES.
1. HEAT TREAT 240,000 PSI, ROCKWELL C 49 TO C 52 PER LSP.14-5100A.
2. INSPECTION TEST LOAD AT .250 DEFLECTION TO BE 10 LB ± 20%
3. MAXIMUM DEFLECTION .375
4. FINISH: TIN PLATE PER LSP.14-8300. DO NOT EXCEED 375°F DURING BAKING PROCESS. COAT WITH EMERALON 310 PER LSP-14-10200 AFTER PLATING.



LDW 280-11071 -1

BEND RADIUS 5/64

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	✓
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	✓
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

LDW 280-11071

LDW 280-11071

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
LEM	SIZE C	CODE IDENT NO. 26512	LDW 280-11071	
MODEL OR END ITEM	SCALE FULL		SHEET [illegible].00	

NAS 9-1100

24 *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280 | EO NO. 296
CONTROL INFO NO. LDW230 A 0658

ENG 33.2 REV 3-65

*

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
✓ LDW280-10981	A1	SEE DRAWING
		↑
✓ -11015	B1	
✓ -11025	B1	
✓ -11028	B4	
✓ -11035	A2	
✓ -11036	B1	
✓ -11039	A1	
✓ -11045	A1	
✓ -11048	B1	
✓ -11050	C1	
✓ P11055	B2	
✓ P11056	C2	
✓ -11067	B1	
✓ -11068	B1	
✓ H 11069	B1	
-11070	C1	
-11071	A1	
-11072	A1	
-11073	A2	
P11087	B1	
-11103	A1	
-11116	A1	
-11119	B1	
-11123	A2	
-11128	C1	
-11149	A1	
-11153	A1	
-11154	A2	
-11155	A1	
-11156	B1	
-11157	B2	↓
LDW280-11160	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG		GAEC C EO RELEASE
REASON FOR EO: ADDITIONAL REQUIREMENTS		DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.		E 10/4

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM-9(39)
LEM		LEM-10(40) LEM-11(41)	LEM-12(42)
LEM		LEM-13(43) LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO
DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCAP)

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY	RP			—	hw		RMC	AC
DATE	9/23/66			—	9.27		10-6-66	10-3-66
	V.D.I.							

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LEO280
EO NO.: 296

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 35

01
NAS 9-1100

LDW 280-11072

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW 280-23335	LEM6 (36)	2
↑	↑	LEM5 (35)	2
		LEM4 (34)	2
		LEM3 (33)	2
		LEM2 (32)	2
		LEM1 (31)	2
↓	↓	LTA 8 (18)	2
LEM	LDW280-23335	LTA3 (13)	2

PART NO. LDW 280-11072-11

GAEC SCH NO. 31-1

TO BE REDRAWN ON PRODUCTION FORMAT 3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -11

GRUMMAN REL INFO

PRIM NO. 215 45/001 MP 17 R 4-13

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY	G. OLIVER –	WEIGHTS	Robinson 4-14
LAYOUT BY	G. OLIVER 4/9/66	RELIABILITY	
CHECKED BY	—		
GRP. LEADER	4/11/66		
VEH. DES. INT	4/11		
STRUCTURES	4/12	PROJ ENGR	4-14
STRUCTURES	Hilderman 4/13	REL GROUP	Caccamise 4-16-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SHOCK ABSORBER
ASCENT STAGE, MID SECTION, UPPER HATCH - DOWNSTOP.

SIZE B

CODE IDENT NO. 26512

LDW280-11072

SCALE NONE

SHEET 1.00 OF 3

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
							05262	LDW 280-11072-11	E	SHOCK ABSORBER	DISOGRIN		IDSA 6245	.125 x 3/4 x 1	NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

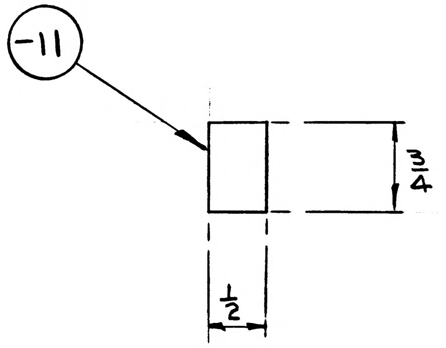
SIZE	CODE IDENT NO.	
B	26512	LDW 280-11072

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	√
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	

FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW 280-11072

SCALE FULL
SHEET 3.00

ENG 73.11 12-64

01

NAS 9-1100

24 *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280
EO NO. 296
CONTROL INFO NO. LDW280 A 0658

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS* THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9 (39), LEM-10(40), LEM-11(41), LEM-12 (42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10981	A1	SEE DRAWING
-11015	B1	
-11025	B1	
-11028	B4	
-11035	A2	
-11036	B1	
-11039	A1	
-11045	A1	
-11048	B1	
-11050	C1	
P11055	B2	
P11056	C2	
-11067	B1	
-11068	B1	
H11069	B1	
-11070	C1	
-11071	A1	
-11072	A1	
-11073	A2	
P11087	B1	
-11103	A1	
-11116	A1	
-11119	B1	
-11123	A2	
-11128	C1	
-11149	A1	
-11153	A1	
-11154	A2	
-11155	A1	
-11156	B1	
-11157	B2	
LDW280-11160	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC C EO RELEASE: E 10.8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM-9(39)
LEM		LEM-10(40) LEM-11(41)	LEM-12(42)
LEM		LEM-13(43) LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY	RP			—			RMC	AC
DATE	9/23/66			—	9.19		10-6-66	10-3-66

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO. LE0280

EO NO. 296

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 35

01
NAS 9-1100

LDW280-11073 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280H10526	LM-15(45)	2 EA
LM	LDW280H10536	LM-14(44)	2 EA
LM	LDW280H10536	LM-13(43)	2 EA
LM	LDW280H10536	LM-12(42)	2 EA
LM	LDW280H10536	LM-11 (41)	2 EA
LM	LDW280H10536	LM-10(40)	2 EA
LM	LDW280H10536	LM-9(39)	2 EA
LM	LDW280H10536	LM-8(38)	2 EA
LM	LDW280H10536	LM-7(37)	2 EA
LM	LDW280H10536	LM-6(36)	2 EA
LM	LDW280H10536	LM-5(35)	2 EA
LM	LDW280H10536	LM-4(34)	2 EA
LM	LDW280H10536	LM-3(33)	2 EA
LM	LDW280H10536	LTA-3(13)	2 EA
PART NO. LDW280-11073-13 & -15		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280H10117	LTT430-20630	2 EA
LM	LDW280H10117	LTT430-20620	2 EA
LM	LDW280H10117	LM-2(32)	2 EA
LM	LDW280H10117	LM-1(31)	2 EA
LM	LDW280H10117	LTA-8(18	2 EA
PART NO. LDW280-11073-11 & -12		GAEC SCH NO. 32	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -15

GRUMMAN REL INFO A

PRIM NO. 215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM I
DOCUMENTATION TYPE II

DRAWN BY	LOWENSTEIN 4/6/66
LAYOUT BY	LOWENSTEIN 4/6/66
CHECKED BY	
GR LDR	B. PHILLIPS 4/6/66
VEH. DES. INT.	W. BISCHOFF 4/7/66
STRUCTURES	J.V. F.E.B. 4/8/66
STRUCTURES	HILDERMAN 4/8/66
WEIGHTS	D. ROBESCH 4/11/66
PROJ ENGR	J. ALBER - R.C. 4/12/66
REL GROUP	BOTTI 4/12/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE- MID SECTION
REACTION CONTROL LINES SUPPORT

SIZE B
CODE IDENT NO. 26512
LDW280-11073 A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11073-N.C. 4-12-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ________

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED - NO CHANGE - LAST REV N.C. - LOFTED DWG WAS DIMENSIONED DWG - ADDED SH 1.10, 2.00, 3.00 G. KORDES - 10/26/66					RMC (ue) 11-8-66	
A	1	1.00, 1.10						LE0280-104	FOR -11 & -12 ADDED EFFECTIVITY OF LTT430-20620 & LTT430-20630.	LTT430-20620 LTT430-20630	NOT	REQ'D	RMS KORDES 10/26/66		
	2	1.00, 1.10						LE0280-296	FOR -13 & -15 ADDED LM-7 THRU LM-15 EFFECTIVITIES	LM-7 THRU LM-15	NOT	REQ'D			

CHG APPROVED

LTR	GROUP LDR	VEH. DES. INT.	STRUCTURES	STRUCTURES	WEIGHTS		PROJECT	RELEASE			
A	—	11/7/66	11/8								

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11073	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11073-15	E	BRACKET	AL ALLOY SH	QQ-A-250/12	7075-O	.071×4×5	T6	88	
								LDW280-11073-13	E	BRACKET	AL ALLOY SH	QQ-A-250/12	7075-O	.071×4×5	T6	88	
								LDW280-11073-12	E	BRACKET	AL ALLOY SH	QQ-A-250/12	7075-O	.071×4×5	T6	88	
								LDW280-11073-11	E	BRACKET	AL ALLOY SH	QQ-A-250/12	7075-O	.071×4×5	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030
						T6	AL. HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

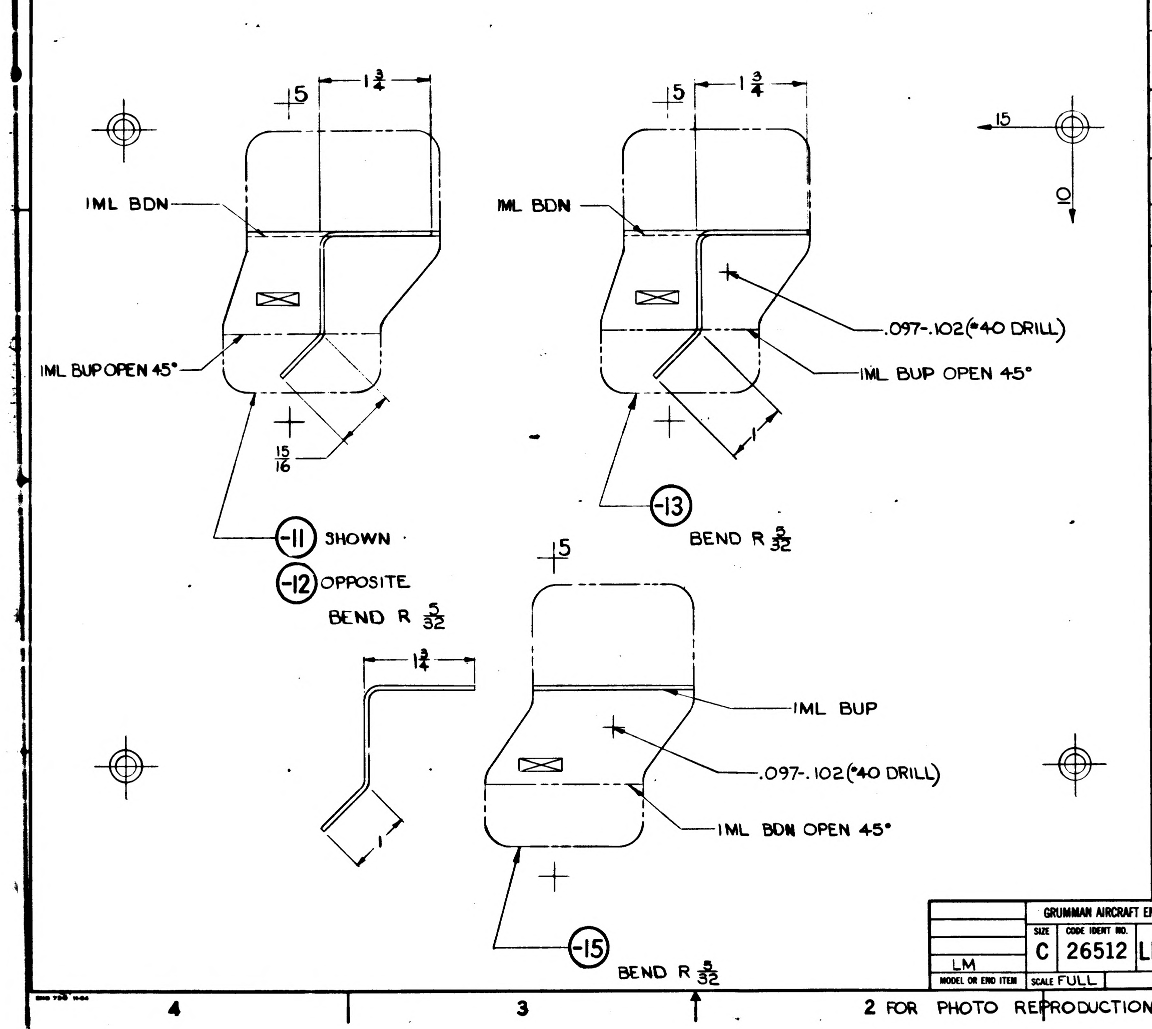
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11073	A
SCALE NONE		SHEET 2.00	

ENG 77.2 7-65

01

NAS 9-1100


5
1 3/4
IML BDN
IML BUP OPEN 45°
15/16
-11 SHOWN
-12 OPPOSITE
BEND R 5/32
5
1 3/4
IML BDN
.097-.102(#40 DRILL)
IML BUP OPEN 45°
1
-13
BEND R 5/32
15
10
5
1 3/4
IML BUP
.097-.102(#40 DRILL)
IML BDN OPEN 45°
1
-15
BEND R 5/32

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	C	26512	LDW280-11073	A

SCALE FULL　SHEET 3.00

LDW280-11073 A

FOR PHOTO REPRODUCTION　K2

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW 280-11073
EO NO. B2
CONTROL INFO NO. LM5-17833

CHANGE NUMBER B1 WAS A3
REF LDW 280-11073
ON LEO 280-834

THIS IS AN ORIG E.O.
RELEASED BY LIAISON

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
INCORRECT CHANGE No. ISSUED ON LEO 280-834	CORRECTED CHANGE NUMBER FOR LEO 280-834 B1 WAS A3	JK (5)

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO	GAEC UNIT NO	SUB CONTR UNIT NO
LM		NOT REQD	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		NOT	REQD

		SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY	Jaf			—		CH	Jaf	Botts
DATE	1/19/68			—		1-16-68	1/19/68	1-16-68
	VDI							

PRIORITY	DRAWING TITLE	DRAWING NO	EO NO.
E	BRACKET A/S-MID SECTION REACTION CONTROL LINES SUPPORT	LDW 280-11073	B2

ISSUED BY LIAISON, D. VALENZA SECTION VDI GROUP NO. 280 PL 25

01 NAS 9-1100

LDW280-11074 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53162	QUAL TEST (72)	1EA
↕	↕	PA-1(47)	1EA
		LM-15(45)	1EA
		THRU	
	LDW280-53162	LM-3(33)	1EA
	LDW280-28869	QUAL TEST (72)	1EA
LM	LDW280-28869	LM-2(32)	1EA
LM	LDW280-28869	LM-1(31)	1EA
LM	LDW280-28869	LTA-8(18)	1EA
PART NO. LDW280-11074-11,-13,-15		GAEC SCH NO. 30-	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A		A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO	
LAST DASH NO. USED	-15	PRIM NO. 215	JK/001 ME-1A 3/5/9

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.010 ± 1/2
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS-9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	A. RIHA 8-24-66	RELIABILITY	
LAYOUT BY	T. THOMPSON 9/2		9/21/66
CHECKED BY	J. Bell 8-30-66		
GRP LEADER	9/2		
VEH DES INT	9/2		
STRESS	9/2	PROJ ENGR	R.M. Carbee 9-3
STRESS	9/2	REL GROUP	9-22-66
WEIGHTS	9-16		

Ⓡ GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SKINS,
OXIDIZER TANK, ASCENT STAGE
MID SECTION, FILL/DRAIN SHIELD

SIZE	CODE IDENT NO.		
B	26512	LDW280-11074	A

SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

CDR 9-2-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	3.00							INC. EO A1. ADDED SH. 1.10	LTA-8,LM-1 LM-2			R. J. PRIZZI 2-28-69		
	2	1.00							INC. LEO 280-365.	QUALTEST(72)					
	3	1.00							INC. LEO 280-380.	LM-3THRU LM-15.					
	4	3.00							INC. LEO 280-499.						
	5	1.00							INC. LEO 280-512.	PA-1(47)					
	6	1.00							Ⓔ	INC. LEO 280-738.	QUALTEST (72)		H.D.	E.C.G.		

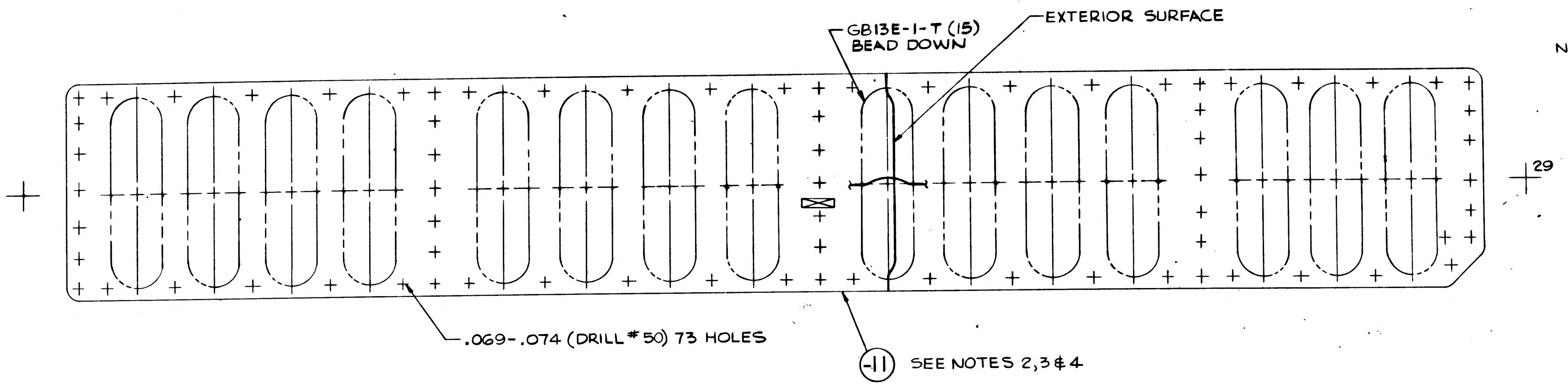
FOR CONTINUATION OF REVISIONS SEE SHEET ______

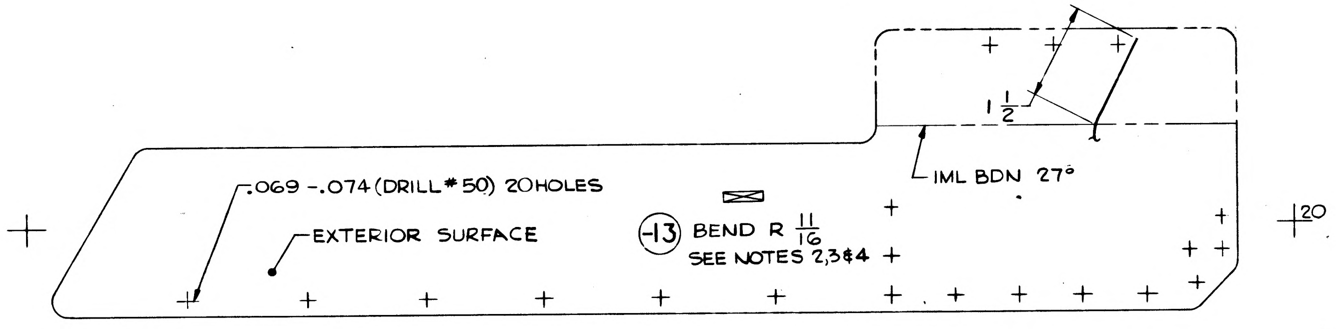
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-11074	A
SCALE NONE			SHEET 1.10

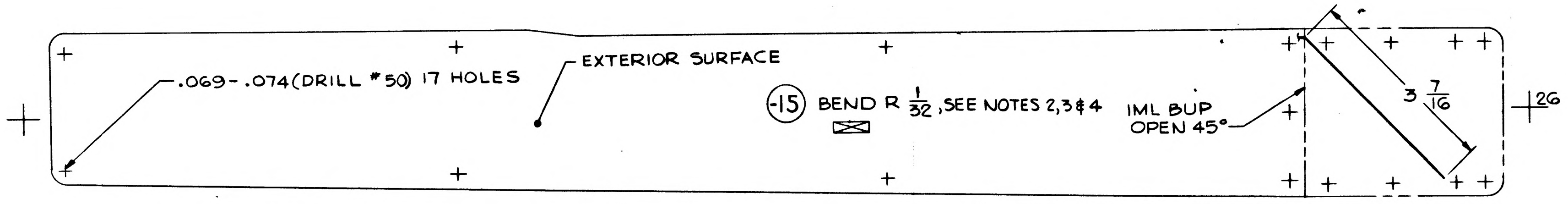
ENG 77.3 5-66

01

NAS 9-1100


GB13E-1-T (15)
BEAD DOWN
EXTERIOR SURFACE
29
.069-.074 (DRILL #50) 73 HOLES
-11 SEE NOTES 2,3 & 4


1 1/2
IML BDN 27°
.069-.074 (DRILL #50) 20 HOLES
EXTERIOR SURFACE
-13 BEND R 11/16
SEE NOTES 2,3 & 4
20


EXTERIOR SURFACE
.069-.074 (DRILL #50) 17 HOLES
-15 BEND R 1/32, SEE NOTES 2,3 & 4
IML BUP
OPEN 45°
3 7/16
26

NOTES

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. MATERIAL FOR -11, -13 & -15 TO BE HAND SELECTED THICKNESS TO BE .020 ± .002. THE INTERIOR SURFACE TO BE CHEM MILLED IN ACCORDANCE WITH LSP14-26100 FROM .020 TO $.008^{+.003}_{-.000}$ TOTAL THICKNESS.
3. MAKE -11, -13 & -15 FROM ALUMINUM ALLOY CLAD SHEET (SKIN QUALITY). -11, 2024-T3 QQ-A-250/5, -13 & -15 2024-T3 QQ-A-250/5. SURFACE DESIGNATED EXTERIOR TO BE PREFINISHED WITH ALUMALITE 200/R1/EB10 AND PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROLL PRODUCTS INC., FARMINGDALE L.I., N.Y.
4. INTERIOR SURFACE TO BE ƒ# 76 PER LSP14-9010.
5 MATERIAL, FINISHES, HANDLING & PERMISSIBLE DEVIATIONS PER LPC-280-16.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

01 NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE. L. I., NEW YORK			
LEM	SIZE E	CODE IDENT NO. 26512	LDW280-11074	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

.FOR 2 PHOTO REPRODUCTION K2

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280 | EO NO. 1492
CONTROL INFO NO. LDW280B8218

FOR THE FOLLOWING DWGS (*) [redacted]

REMOVE [redacted] LM-15 (45): EFF.

DRAWING Nº (*)	**DASH Nº [redacted]		TITLE	NEXT ASSEMBLY	CHANGE Nº
LDW280 - 10882 ✓	-23-25-27-29-31-33	[redacted]	SEE DWG	LDW 280-53162	C2
10884 ✓	-15 -21	[redacted]			C3
10651 ✓	-13 -15	[redacted]			C1
11074 ✓	-11-13-15	[redacted]			B1
11075	-11-13-15-17-19	[redacted]			B1
11076	-11-13-15-17-19	[redacted]			B1
12136	-11-13-15	[redacted]			B1
11077	-11-13-17-19-21	[redacted]			B1
11078	-11-13-15-17-19	[redacted]			B1
LDW280 - 11079	-11-15-17-21-23	[redacted]	SEE DWG	LDW280-53162	B1

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD # 3587 [redacted] PKG 13 Pg. 13 814 (5)

REASON FOR EO
CONFIGURATION CHANGE To LM-15

DESCRIPTION OF EO
FOR [redacted] (*-**) [redacted] REMOVED [redacted] LM-15 (45) EFF.

GAEC EO RELEASE ⓟ 1416
7-18-69
JK 7/28/69

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS									
REVISE DWG	RECORD EO	REWORK	SCRAP								
✓			✓								
				APPROVED BY				FDR/JN			
				DATE	7/8/69			7-8-69	7/11/69	7/10/69	7-26-69
					VDI	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY C
DRAWING TITLE SEE DRAWING
DRAWING NO. LE0-280
EO NO. 1492

8-15-69
ISSUED BY GEO. W. ROCKLEIN X86048 4/25/69 (ML) SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11075 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53162	QUALTEST(70)	1 EA
	LDW280-53162	PA-1(47)	1 EA
	LDW280-53162	LM-15(45)	1 EA
		THRU	
	LDW280-53162	LM-3(33)	1 EA
	LDW280-28869	QUAL.TEST(70)	1 EA
		LM-2(32)	1 EA
		LM-1(31)	1 EA
LM	LDW280-28869	LTA-8(18)	1 EA
PART NO. LDW280-11075-13,-15,-17 & -19		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53162	PA-1(47)	1
	LDW280-53162	LM-15(45)	1
		THRU	
	LDW280-53162	LM-3(33)	1
	LDW280-28869	QUAL.TEST(70)	1
	LDW280-28869	LM-2(32)	1
	LDW280-28869	LM-1(31)	1
LM	LDW280-28869	LTA-8(18)	1
PART NO. LDW280-11075-11		GAEC SCH NO. 30—	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A						
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL^c INFO A	
LAST DASH NO. USED	-19	PRIM NO.	(001)
		215	ME-34-12-11

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	E.SICK 8/24/66	RELIABILITY	
LAYOUT BY	T.THOMPSON		
CHECKED BY	56 8-26-66		
GRLEADER	9/1		
VEHDESINT	9/1		
STRUCTURE	FEG 9/2	PROJ ENGR	R.M. Carbee 9-3
STRUCTURE	9/2	REL GROUP	9-20-66
WEIGHTS	9-1-66		

Ⓡ GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

FRAME
ASCENT STAGE-MIDSECT-OXIDIZER
FILL-DRAIN SHIELD

SIZE	CODE IDENT NO.		
B	26512	LDW280-11075	A
SCALE NONE		SHEET 1.00 OF 4	

CDR 9-2-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A.	1.	1.10, 200						LE0280- 271	REMOVED FINISH #76, ADDED FINISH #88, ADDED SH. 1.10	LTA-8(18) LM-1 (31) & LM-2(32)	✓		E.COX 12-3-68	ec	
	2	1.10, 1.00					✓	LE0280-365	ON-11,13,-15,-17 &-19, ADDED "QUAL. TEST"	QUAL TEST (70)	NOT	REQD			
	3	1.00, 1.10					✓	LE0280- 380	FOR -11,-13,-15,-17 & -19, ADDED LM-3(33) THRU LM-15 (45) EFF.	LM-3(31) THRU LM-15(45)					
	4.	1.00, 1.10					✓	LE0280-512 LCD-1124	ON-11,-13,-15,-17 &-19, ADDED PA-1 (47) REQTS	PA-1(47)					
	5.	1.00, 1.10					✓	LE0280-738 LCD #2104 Ⓐ	FOR-13,-15,-17, & -19, ADDED QUAL TEST REQUIREMENTS	QUAL TEST (70)					

CHG APPROVED	LTR	GROUP LDR

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11075	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11075-19	E	FRAME	AL ALLOY SH	QQ-A-250/12	7075	.032×5½×5⅞	T6	88	
		-17						.032×4¾×6			
		15						.032×4¾×6⅜			
		-13						.032×2⅜×6½			
		LDW280-11075-11	E	FRAME	AL ALLOY SH	QQ-A-250/12	7075	.032×4×6¼	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP 14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11075	A

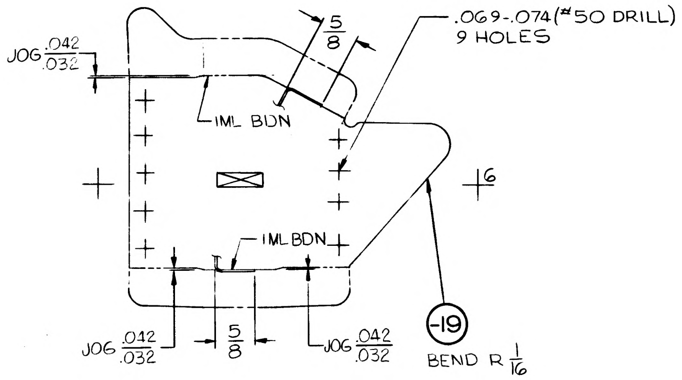
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

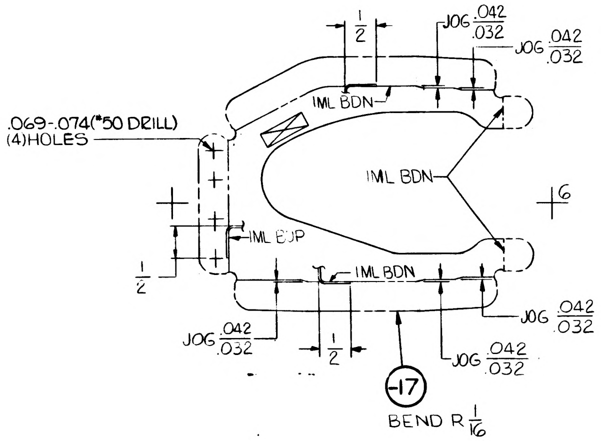
01

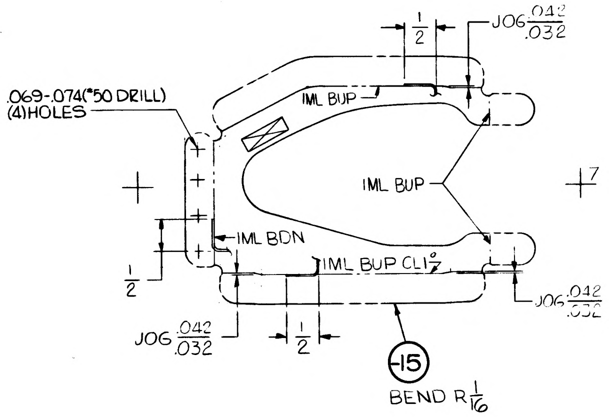
NAS 9-1100

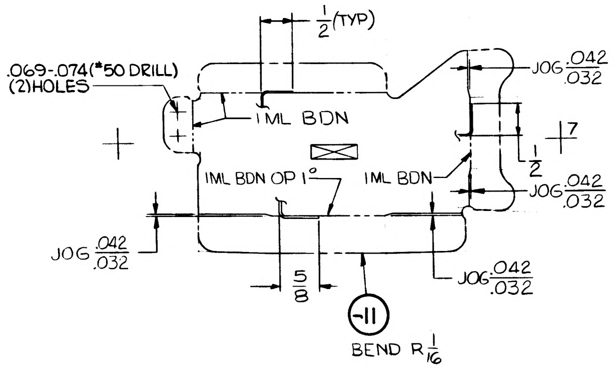

.069-.074(#50 DRILL)
9 HOLES
JOG .042/.032
5/8
IML BDN
IML BDN
JOG .042/.032
5/8
JOG .042/.032
6
-19
BEND R 1/16

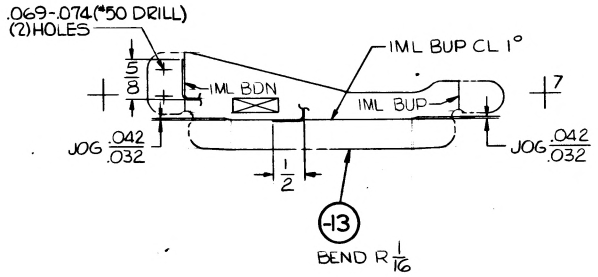
NOTES

1. NO TOOLING HOLES PERMITTED IN PARTS.


1/2
JOG .042/.032
JOG .042/.032
.069-.074(#50 DRILL)
(4)HOLES
IML BDN
IML BDN
IML BUP
IML BDN
6
1/2
JOG .042/.032
JOG .042/.032
JOG .042/.032
1/2
JOG .042/.032
-17
BEND R 1/16


1/2
JOG .042/.032
.069-.074(#50 DRILL)
(4)HOLES
IML BUP
IML BUP
IML BDN
7
IML BUP CL 1°
1/2
JOG .042/.032
JOG .042/.032
1/2
-15
BEND R 1/16


1/2 (TYP)
.069-.074(#50 DRILL)
(2)HOLES
JOG .042/.032
IML BDN
7
IML BDN OP 1°
IML BDN
1/2
JOG .042/.032
JOG .042/.032
5/8
JOG .042/.032
-11
BEND R 1/16


.069-.074(#50 DRILL)
(2)HOLES
IML BUP CL 1°
5/8
IML BDN
IML BUP
7
JOG .042/.032
JOG .042/.032
1/2
-13
BEND R 1/16

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-11075

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE F	CODE IDENT NO. 26512	LDW280-11075	
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

KL

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LE0280

EO NO. 1492

CONTROL INFO NO. LDW280B8216

FOR THE FOLLOWING DWGS (*) [redacted]

REMOVE [redacted] LM-15 (45): EFF.

DRAWING № (*)	** DASH №	[redacted]	TITLE	NEXT ASSEMBLY	CHANGE №
LDW280 - 10882 ✓	-23-25-27-29-31-33	[redacted]	SEE DWG	LDW 280-53162	C2
[illegible] ✓	-15 21	[redacted]	↑	↑	C3
10651 ✓	-13 15	[redacted]			C1
11074 ✓	-11-13-15	[redacted]			B1
11075 ✓	-11-13-15-17-19	[redacted]			B1
11076	-11-13-15-17-19	[redacted]			B1
12136	-11-13-15	[redacted]			B1
11077	-11-13-17-19-21	[redacted]			B1
11078	-11-13-15-17-19	[redacted]	↓	↓	B1
LDW280 - 11079	-11-15-17-21-23	[redacted]	SEE DWG	LDW280-53162	B1

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD # 3587 [redacted] PKG 13 Pg. 13874 (5)

REASON FOR EO: CONFIGURATION CHANGE To LM-15

DESCRIPTION OF EO: FOR [redacted] (*-**) [redacted] REMOVED [redacted] LM-15 (45) EFF.

GAEC EO RELEASE: 7-18-69; JK 7/28/69

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO ☐

DISPOSITION OF PARTS: REWORK ☐ SCRAP ✓

APPROVED BY	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	CONT
DATE	7/8/69			7-8-69	7/10/69		7/10/69	7-26-69

PRIORITY: C

DRAWING TITLE: SEE DRAWING

DRAWING NO.: LEO-280

EO NO.: 1492

8-15-69

ISSUED BY GEO. W. ROCKLEIN X86048 4/25/69 (ML) SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11076 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28869	QUAL TEST(70)	1 EA
	LDW280-53162	QUAL TEST(70)	
		PA-1(47)	
		LM-15(45	
		LM-14(44)	
		LM-13(43)	
		LM-12(42)	
		LM-11(41)	
		LM-10(40)	
		LM-9 (39)	
		LM-8(38)	
		LM-7(37)	
		LM-6(36)	
		LM-5(35)	
		LM-4(34)	
	LDW280-53162	LM-3(33)	
	LDW280-28869	LM-2(32)	
	LDW280-28869	LM-1(31)	
LM	LDW280-28869	LTA-8(18)	1 EA

PART NO. LDW280-11076-11,-13,-15,-17 & -19

GAEC SCH NO. 30—

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

GRUMMAN REL INFO A

LAST DASH NO. USED -19

PRIM NO. 215

K(001) ME-3A 14/3/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY D'AGOSTO 8-24-66
LAYOUT BY T. THOMPSON 9/1
CHECKED BY SG 8-27-66
GROUP LDR 9-1
VEH DES INT 9/1
STRUCTURES 9/1
STRUCTURES Hilderman 9/2
WEIGHTS 9/2
RELIABILITY
PROJ ENGR R.M. Carbee 9-3
REL GROUP Botti 9-20-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE - MID SECT - OXIDIZER
FILL / DRAIN SHIELD

SIZE B
CODE IDENT NO. 26512
LDW280-11076 A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

CDR 9-2-66.

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	2.00						LEO280-271	REMOVED FINISH #76, ADDED FINISH # 88. ADDED SH 1.10	LTA-8 (18) LM-1 & LM-2	✓		S. CARANO 12-10-68		
	2	3.00	5C				✓	E.O.A2	IN FLD. REVISED TRIM -19		✓				
	3	1.00					✓	LEO280-365	ON -11, -13, -15, -17, & -19 ADDED "QUAL TEST"	QUAL TEST (70)	NOT	REQD.			
	4	1.00					✓	LEO280-380	FOR -11, -13, -15, -17 & -19 ADDED LM-3 (33) THRU LM-15 (45) EFF.	LM-3 THRU LM-15					
	5	1.00					✓	LEO280-512 LCD-1124	ON -11, -13, -15, -17 & -19 ADDED PA-1 (47) REQTS.	PA-1 (47)					
	6	1.00		Ⓡ			✓	LEO280-738 LCD-2104	FOR -11, -13, -15, -17 & -19 ADDED QUAL TEST REQTS.	QUAL TEST (70)			12-13-68 E.C.G.		

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCT	STRUCT	WEIGHTS	RELIABILITY					
	A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11076	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11076-19	E	CHANNEL	AL ALLOY SH	QQ-A-250/12	7075	.020×5 3/8×28 1/8	T6	88	
		-17	↕	ANGLE	↕	↕	↕	.032×2 1/8×6 1/2	↕	↕	
		-15	↕	↕	↕	↕	↕	.032×1 7/8×6	↕	↕	
		-13	↕	↕	↕	↕	↕	.040×2×5 3/4	↕	↕	
		LDW280-11076-11	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.032×2 1/8×5 1/2	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11076	A

SCALE NONE

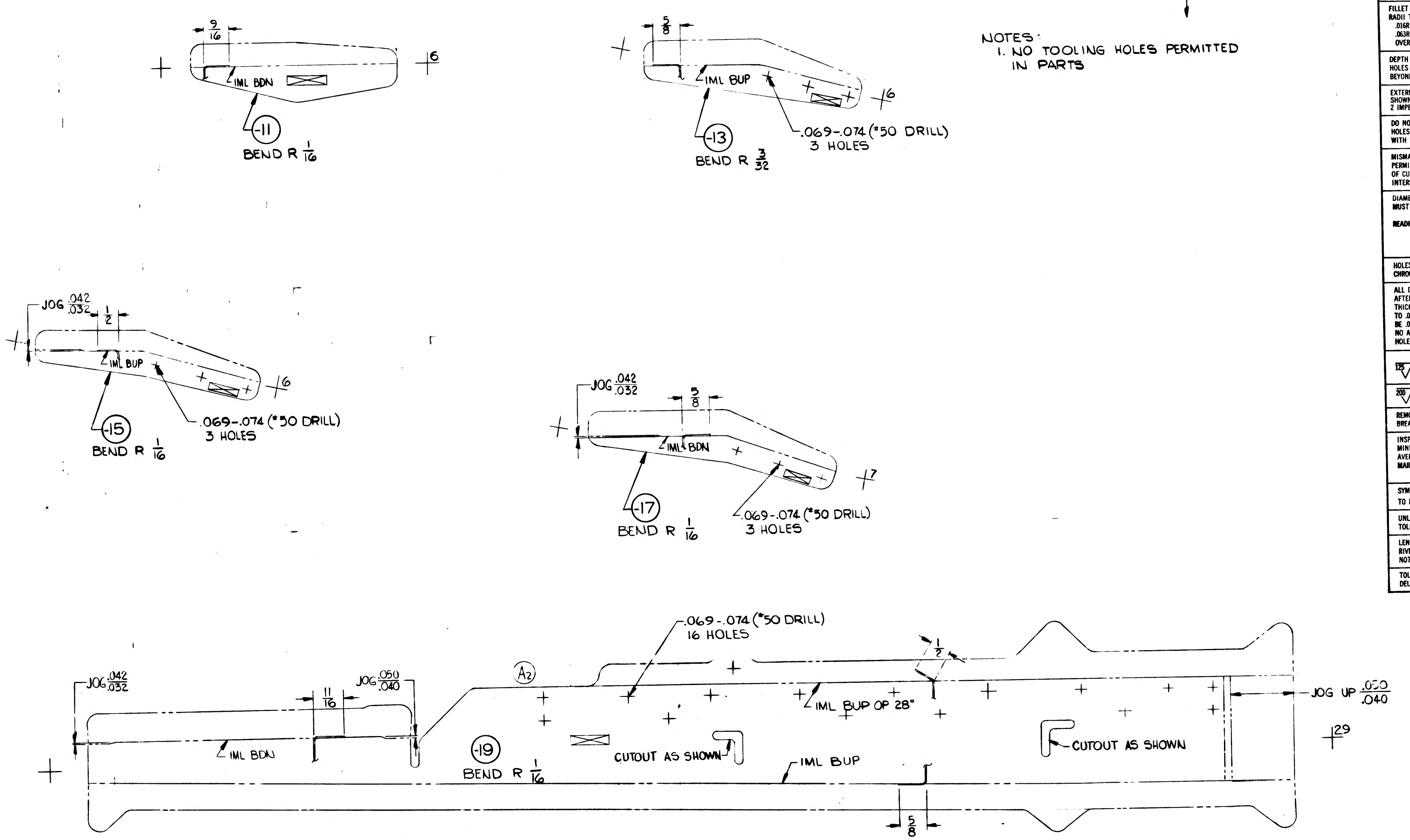
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS


30
25
9/16
IML BDN
-11
BEND R 1/16
6
5/8
IML BUP
-13
BEND R 3/32
.069-.074 (#50 DRILL) 3 HOLES
6
JOG .042/.032
1/2
IML BUP
-15
BEND R 1/16
.069-.074 (#50 DRILL) 3 HOLES
6
JOG .042/.032
3/8
IML BDN
-17
BEND R 1/16
.069-.074 (#50 DRILL) 3 HOLES
7
.069-.074 (#50 DRILL) 16 HOLES
A2
1/8
JOG .042/.032
11/16
JOG .050/.040
IML BDN
-19
BEND R 1/16
CUTOUT AS SHOWN
IML BUP OP 28°
IML BUP
CUTOUT AS SHOWN
JOG UP .050/.040
29
5/8

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ✓ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	F	26512	LDW280-11076	A
	SCALE FULL			SHEET 3.00

FOR PHOTO REPRODUCTION

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280 | EO NO. 1492
CONTROL INFO NO. LDW280B8218

FOR THE FOLLOWING DWGS (*) [redacted]

REMOVE [redacted] LM-15 (45): EFF.

DRAWING № (*)		**DASH № [redacted]		TITLE	NEXT ASSEMBLY	CHANGE №
LDW280 - 10882	✓	-23-25-27-29-31-33	[redacted]	SEE DWG	LDW 280 - 53162	C2
10884	✓	-15 21	[redacted]			C3
10651	✓	-13 15	[redacted]			C1
11074	✓	-11-13-15	[redacted]			B1
11075	✓	-11-13-15-17-19	[redacted]			B1
11076	✓	-11-13-15-17-19	[redacted]			B1
12136		-11-13-15	[redacted]			B1
11077		-11-13-17-19-21	[redacted]			B1
11078		-11-13-15-17-19	[redacted]			B1
LDW280 - 11079		-11-15-17-21-23	[redacted]	SEE DWG	LDW280-53162	B1

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD # 3587 [redacted] PKG 13 Pg. 13474 (5)

REASON FOR EO: CONFIGURATION CHANGE TO LM-15

DESCRIPTION OF EO: FOR [redacted] (*-**) [redacted] REMOVED [redacted] LM-15 (45) EFF.

GAEC EO RELEASE: 7-18-69; JK 7/28/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK | SCRAP ✓

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY								
DATE	07/8/69 VDI			7-8-69	7/1/69		7/10/69	7-26-69

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DRAWING	LEO-280	1492

8-15-69
ISSUED BY GEO. W. ROCKLEIN X86048 4/25/69 (ML) SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11077 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-11077-21			
LM	LDW280-53162	PA-1 (47)	1
	LDW280-53162	LM-15 (45)	1
	LDW280-53162	LM-3 (33)	1
	LDW280-28869	QUALTEST (70)	1
		LM-2 (32)	1
		LM-1 (31)	1
LM	LDW280-28869	LTA-8	1

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-11077-11,-13,-17 & -19		30-	
LM	LDW280-53162	QUALTEST (70)	1-EA
	LDW280-53162	PA-1 (47)	1-EA
	LDW280-53162	LM-15 (45)	1-EA
		THRU	
	LDW280-53162	LM-3 (33	1 EA
	LDW280-28869	QUALTEST (70)	1 EA
	LDW280-28869	LM-2 (32)	1 EA
	LDW280-28869	LM-1 (31)	1 EA
LM	LDW280-28869	LTA-8 (18)	1 EA

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO.			

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -21

GRUMMAN REL INFO A

PRIM NO. 215 VK(om1) ME-30 12/14/4

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	D'AGOSTO 8/30/66	RELIABILITY	
LAYOUT BY	THOMPSON 9/1		
CHECKED BY	EG 9-1-66		
GROUP LDR	9/1		
VEH DES INT	9/1		
STRUCTURES	9/2	PROJ ENGR	R. M. Carbee (W) 9-3
STRUCTURES	9/2	REL GROUP	9-20-66
WEIGHTS	9/1		

Ⓡ GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE-MID SECTION-OXIDIZER
FILL/DRAIN SHIELD

SIZE	CODE IDENT NO.		
B	26512	LDW280-11077	A
SCALE	NONE	SHEET 1.00 OF 4	

(11)

ENG 77.1 12-65

CDE 9-2-66.

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1.	1.10 2.00						LE0280-271	REMOVED FINISH #76, ADDED FINISH #88. ADDED SH. 1.10	LTA-8(18) LM-1 (31), LM-2(32	✓		E. COX 7-25-68		
	2.	1.00, 1.10 2.00, 3.00					✓	EOA2	REMOVED -15 & ADDED -21	LM-1(31), LM-2(32 LTA-8		-15			
	3.	1.00, 1.10					✓	LE0280-365	ON-11,-13,-17,-19 &-21, ADDED "QUAL TEST"	QUAL TEST(70	NOT	REQ'D.			
	4.	1.00, 1.10					✓	LE0280-380	FOR-11,-13,-17,-19,-21 ADDED LM-3 (33) THRU LM-15(45) EFF.	LM-3(33) THRU LM-15(45)	NOT	REQ'D			
	5.	1.00, 1.10					✓	LE0280-512 LCD 1124	ON-11,-13,-17,-19 &-21, ADDED PA-1 (47) REQ'TS	PA-1 (47)	NOT	REQ'D			
	6.	1.00, 1.10					✓	LE0280-738 LCD 2104	FOR-11,-13,-17 &-19 , ADDED QUAL TEST REQUIREMENTS	QUAL TEST(70)	NOT	REQ'D.	E.C.G		

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11077	A
SCALE NONE			SHEET 1.10

ENG 77.3 5-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11077-21	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.028 × 4 × 10	T6	88	
		-19		BRACKET				.028 × 5 3/8 × 8 1/2			
		-17		BRACKET				.028 × 5 3/8 × 8 1/2			
		-13		ANGLE				.028 × 2 1/8 × 21 1/8			
		LDW280-11077-11	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.028 × 2 1/2 × 27 3/4	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11077	A

SCALE NONE

SHEET 2.00

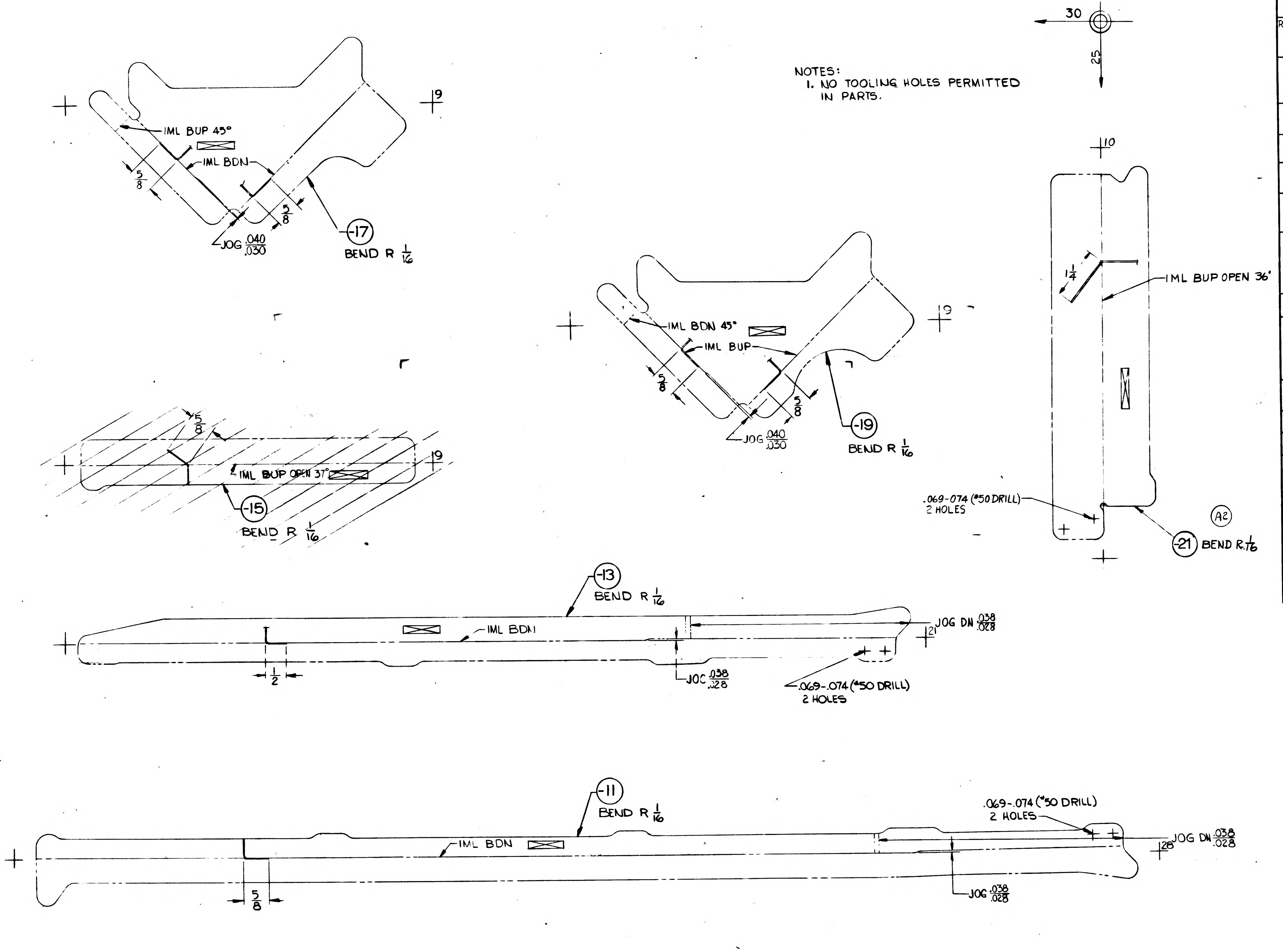
Ⓐ

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.



30
25
IML BUP 45°
IML BDN
5/8
5/8
JOG .040/.030
-17
BEND R 1/16
19
IML BDN 45°
IML BUP
5/8
5/8
JOG .040/.030
-19
BEND R 1/16
19
10
1 1/4
IML BUP OPEN 36°
.069-.074 (#50 DRILL) 2 HOLES
-21
BEND R 1/16
A2
5/8
IML BUP OPEN 37°
-15
BEND R 1/16
19
-13
BEND R 1/16
IML BDN
JOG DN .038/.028
21
1/2
JOG .038/.028
.069-.074 (#50 DRILL) 2 HOLES
-11
BEND R 1/16
.069-.074 (#50 DRILL) 2 HOLES
IML BDN
JOG DN .038/.028
26
5/8
JOG .038/.028

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

	R GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE F	CODE IDENT NO. 26512	LDW280-11077	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

LDW280-11077 A

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280
EO NO. 1492
CONTROL INFO NO. LDW280B8218

FOR THE FOLLOWING DWGS (*) [redacted]

REMOVE [redacted] LM-15 (45): EFF.

DRAWING Nº (*)	**DASH Nº [redacted]		TITLE	NEXT ASSEMBLY	CHANGE Nº
LDW280 - 10882 ✓	-23-25-27-29-31-33	[redacted]	SEE DWG	LDW 280-53162	C2
10884 ✓	-15-21	[redacted]			C3
10651 ✓	-13-15	[redacted]			C1
11074 ✓	-11-13-15	[redacted]			B1
11075 ✓	-11-13-15-17-19	[redacted]			B1
11076 ✓	-11-13-15-17-19	[redacted]			B1
12136 ✓	-11-13-15	[redacted]			B1
11077 ✓	-11-13-17-19-21	[redacted]			B1
11078	-11-13-15-17-19	[redacted]			B1
LDW280 - 11079	-11-15-17-21-23	[redacted]	SEE DWG	LDW280-53162	B1

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD # 3587 [redacted] PKG 13 Pg. 13814 (5)

REASON FOR EO: CONFIGURATION CHANGE To LM-15

DESCRIPTION OF EO: FOR [redacted] (*- ** [redacted] REMOVED [redacted] LM-15 (45) EFF.

(R) GAEC 1416 EC RELEASE 7-18-69
JK 7/28/69

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK SCRAP ✓

APPROVED BY								
DATE	7/8/69			7-8-69	7/10/69		7/10/69	7-26-69
	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DRAWING	LEO-280	1492

8-15-69
ISSUED BY GEO. W. ROCKLEIN X86048 4/25/69 (ML) SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11078 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO	REQD PER MODULE OR END ITEM
LM	LDW280-28869	QUALTEST(70)	1EA
	LDW280-53162	QUALTEST(70)	1EA
		PA-1 (47)	1EA
		LM-15(45)	1EA
		LM-14(44)	1EA
		LM-13(43)	1EA
		LM-12(42)	1EA
		LM-11(41)	1EA
		LM-10(40)	1EA
		LM-9(39)	1EA
		LM-8(38)	1EA
		LM-7(37)	1EA
		LM-6(36)	1EA
		LM-5(35)	1EA
		LM-4(34)	1EA
	LDW280-53162	LM-3(33)	1EA
	LDW280-28869	LM-2(32)	1EA
	LDW280-28869	LM-1(31)	1EA
LM	LDW280-28869	LTA-8(8)	1EA
PART NO. LDW280-11078-11, -13, -15, -17 & -19		GAEC SCH NO. 30-	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A						
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED
LAST DASH NO. USED -19
GRUMMAN REL INFO VA
PRIM NO. 215 JK (001) ME-3A-11/2/18

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II
DRAWN BY E.SICK 8-26-66
RELIABILITY
LAYOUT BY T.THOMPSON 9/1
CHECKED BY G. Kartzman 8-27-66
GR LEADER 9/1
VEH DES INT 9/1
STRUCTURE 9/1
STRUCTURE 9/2
WEIGHTS A Robert 9/16
PROJ ENGR R.M. Carbee 9-3
REL GROUP 9-20-66

® GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHANNEL
ASCENT STAGE - MID SECTION -
OXIDIZER TANK - DRAIN LINE

SIZE B
CODE IDENT NO. 26512
LDW280-11078 A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

CDE 9-2-66

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	2.00						LE0280-271	REMOVED FINISH #76, ADDED FINISH #88. ADDED SH. 1.10	LTA-8(18) LM-1 & LM-2	✓				
	2	1.00					✓	LE0280-365	ON-11,-13,-15,-17 & -19 ADDED "QUAL TEST"	QUALTEST(70)	NOT	REQD	S. CARANO 11-15-68		
	3	1.00					✓	LE0280-380	FOR-11,-13,-15,-17 & -19 ADDED LM-3(33) THRU LM-15(45)	LM-3 THRU LM-15					
	4	1.00					✓	LE0280-512 LCD-1124	ON-11,-13,-15,-17 & -19 ADDED PA-1(47) REQ'TS	PA-1(47)					
	5	1.00					✓	LE0280-738 LCD-2104	FOR-11,-13,-15,-17 & -19 ADDED 'QUAL TEST' REQTS.	QUALTEST(70)				BC	

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCT	STRUCT	WEIGHTS	RELIABILITY
A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11078	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11078-19	E	GUSSET	AL ALLOY SH	QQ-A-250/12	7075-O	.032×2⅜×2½	T6	88	
		-17		GUSSET				.020×2½×2½			
		-15		CLIP				.020×1½×2½			
		-13		CLIP				.032×2¾×3			
		LDW280-11078-11	E	CHANNEL	AL ALLOY SH	QQ-A-250/12	7075-O	.032×3⅜×3⅝	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	AL HEAT TREAT	MIL-H-6088
88	ANODIZE	LSP 14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11078	A
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280
EO NO. 1492
CONTROL INFO NO. LDW280B8218

FOR THE FOLLOWING DWGS (*) [redacted]

REMOVE [redacted] LM-15 (45): EFF.

DRAWING № (*)	**DASH №	[redacted]	TITLE	NEXT ASSEMBLY	CHANGE №
LDW280 - 10882 ✓	-23-25-27-29-31-33	[redacted]	SEE DWG	LDW 280 - 53162	C2
10884 ✓	-15 21	[redacted]			C3
10651 ✓	-13 15	[redacted]			C1
11074 ✓	-11-13-15	[redacted]			B1
11075 ✓	-11-13-15-17-19	[redacted]			B1
11076 ✓	-11-13-15-17-19	[redacted]			B1
12136 ✓	-11-13-15	[redacted]			B1
11077 ✓	-11-13-17-19-21	[redacted]			B1
11078 ✓	-11-13-15-17-19	[redacted]			B1
LDW280 - 11079	-11-15-17-21-23	[redacted]	SEE DWG	LDW280 - 53162	B1

DETAIL SPEC REQ ☐	CL II ENGRG CHG ☐	CL I ENGRG CHG ✓	LCD # 3587 [redacted] PKG 13 PG. 13814 (5)

REASON FOR EO
CONFIGURATION CHANGE TO LM-15

DESCRIPTION OF EO
FOR [redacted] (** - [redacted]) REMOVED [redacted] LM-15 (45) EFF.

GAEC EO RELEASE
7-18-69
JK 7/28/69

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK SCRAP ✓

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOV
APPROVED BY				FDR				
DATE	07/8/69			7-8-69	7/10/69		7/10/69	7-26-69

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DRAWING	LE0-280	1492

8-15-69
ISSUED BY GEO. W. ROCKLEIN X86048 4/25/69 (ML) SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11079 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53162	QUALTEST(70)	1 EA
LEM	LDW280-53162	PA-1(47)	1 EA
LEM	LDW280-53162	LEM-15(45)	1 EA
		THRU	
LEM	LDW280-53162	LEM-3(33)	1 EA
LEM	LDW280-28869	QUALTEST(70)	1 EA
LEM	LDW280-28869	LEM-2(32)	1 EA
LEM	LDW280-28869	LEM-1(31)	1 EA
LEM	LDW280-28869	LTA-8(18)	1 EA
PART NO. LDW280-11079-11, -15, -17, -21 & -23		GAEC SCH NO. 30-	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO		
LAST DASH NO. USED	-23	PRIM NO. 215	VK(601) ME-1A	3/23/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.010 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	A. RIHA 9-3-66	RELIABILITY	
LAYOUT BY	T. THOMPSON 9/6		
CHECKED BY	WCG 9-3-66		
GRP LEADER	ACP P. HENTON 9/6/66		
VEH DES INT	9/6		
STRUCTURES	9/6	PROJ ENGR	R. M. Carbee 9-8
STRUCTURES	Hilderman 9-7	REL GROUP	J. Tagliavia 9/21/66
WEIGHTS	L. Garcia 9/21/66		

Ⓡ GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

GUSSET, OXIDIZER TANK - ASCENT STAGE - MID SECTION - FILL/DRAIN SHIELD

SIZE	CODE IDENT NO.		
B	26512	LDW280-11079	A
SCALE	NONE	SHEET 1.00 OF 4	(A)

CDK 9/2/66

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00, 1.10 2.00							INC LEO280-271	LTA-8, LM-1 LM-2			J. BISCALDI 3-21-69		3-25-69
	2	2.00, 3.00							INC EO-A2	LTA-8, LM-1 LM-2					
	3	1.00							INC LEO280-365	QUAL TEST					
	4	1.00							INC LEO280-380	LM-3 THRU LM-15					
	5	1.00							INC LEO280-512	PA-1					
	6	1.00							INC LEO280-738 BC	QUAL TEST 70					
								Ⓡ							

CHG APPROVED

LTR	GROUP LDR
A	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11079	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11079-23	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075-O	.008 x 4 x 20	T6	88	
								-17		CLIP				.032 x 1 5/8 x 1 3/4			
								-15		CLIP				.032 x 1 5/8 x 1 3/4			
								-21		ANGLE				.020 x 3 x 5			
								LDW280-11079-11	E	GUSSET	AL ALLOY SH	QQ-A-250/12	7075-O	.032 x 2 1/2 x 2 3/4	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP 14-9030

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

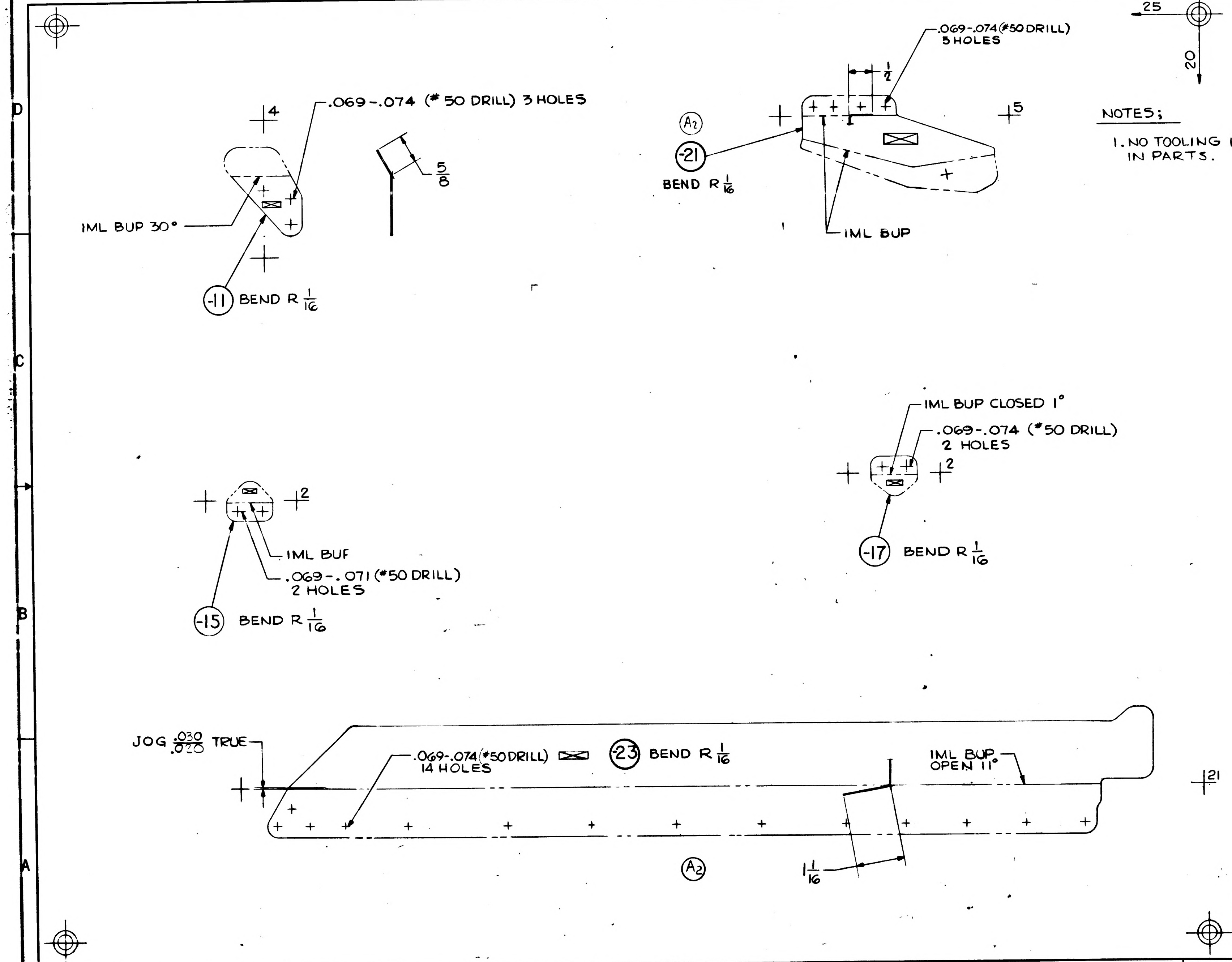
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11079	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01 NAS 9-1100


LDW280-11079 A
A2
-21
BEND R 1/16
.069-.074 (#50 DRILL) 5 HOLES
1/2
5
IML BUP
25
20
4
.069-.074 (#50 DRILL) 3 HOLES
5/8
IML BUP 30°
-11
BEND R 1/16
IML BUP CLOSED 1°
.069-.074 (#50 DRILL) 2 HOLES
2
-17
BEND R 1/16
2
IML BUP
.069-.071 (#50 DRILL) 2 HOLES
-15
BEND R 1/16
JOG .030/.020 TRUE
.069-.074 (#50 DRILL) 14 HOLES
23
BEND R 1/16
IML BUP OPEN 11°
21
1 1/16
A2

NOTES;

1. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-11079	A
	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION K-2

LDW280-11079 A

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280 EO NO. 1492
CONTROL INFO NO. LDW280B8218

FOR THE FOLLOWING DWGS (*) [redacted]

REMOVE [redacted] LM-15 (45): EFF.

DRAWING Nº (*)		**DASH Nº [redacted]		TITLE	NEXT ASSEMBLY	CHANGE Nº
LDW280 - 10882	✓	-23-25-27-29-31-33	[redacted]	SEE DWG	LDW 280 - 53162	C2
10864	✓	-15 21	[redacted]			C3
10651	✓	-13 15	[redacted]			C1
11074	✓	-11-13-15	[redacted]			B1
11075	✓	-11-13-15-17-19	[redacted]			B1
11076	✓	-11-13-15-17-19	[redacted]			B1
12136	✓	-11-13-15	[redacted]			B1
11077	✓	-11-13-17-19-21	[redacted]			B1
11078	✓	-11-13-15-17-19	[redacted]			B1
LDW280 - 11079	✓	11-15-17-21-23	[redacted]	SEE DWG	LDW280-53162	B1

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD #3587 [redacted] PKG 13 Pg. 13814 (5)

REASON FOR EO: CONFIGURATION CHANGE To LM-15

DESCRIPTION OF EO: FOR [redacted] (*-**) [redacted] REMOVED [redacted] LM-15 (45) EFF.

GAEC EO RELEASE: 7-18-69; JK 7/28/69

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO ☐
DISPOSITION OF PARTS: REWORK ☐ SCRAP ✓

	APPROVED BY							
APPROVED BY				FDR/9V				
DATE	7/8/69			7-8-69	7/10/69		7/10/69	7-26-69
	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C
DRAWING TITLE: SEE DRAWING
DRAWING NO.: LE0-280
EO NO.: 1492

8-15-69
ISSUED BY GEO. W. ROCKLEIN X86048 4/25/69 (ML) SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

-7	-5	-3	-1	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	2	2	2	MS27980-1N	E		FASTENERS SNAP STYLE	STD PART						
	2	2	2	GS506G-1			SOCKET	GRUMMAN STD						
1				LDW340-11082-19			STIFFENER	SEE NOTE 9				NONE	NONE	
1				-17			STRAP	SEE NOTE 8						
	1			-15										
		1		-13										
			1	-11			STRAP	SEE NOTE 8						
				-7			STRAP ASSY							
				-5			STRAP ASSY							
				-3	E		STRAP ASSY							
				LDW340-11082-1			STRAP ASSY					NONE	NONE	

QTY PER ASSEMBLY

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11082	A

SCALE NONE

SHEET 2.00

ENG 77.2 5-64

01

NAS 9-1100

LDW280-11089 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28339	LM-2(32)	2
LM	LDW280-28339	LM-1(31)	2
LM	LDW280-28339	LTA-8(18)	2
PART NO. LDW280-11089-13		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28339	LM-2(32)	1 EA
LM	LDW280-28339	LM-1(31)	1 EA
LM	LDW280-28339	LTA-8(18)	1 EA
PART NO. LDW280-11089-11, -15 & -17		GAEC SCH NO. 31-2	

WORK PKG FUNCTION NO. 110 .5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED —

LAST DASH NO. USED -17

GRUMMAN REL INFO A

PRIM NO. 215 JK(001) M.P. SA-5/31/7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ± 1/32 ± .020 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM
DOCUMENTATION TYPE II

DRAWN BY	E. HARRIGAN 4/7/66	WEIGHTS	LAMORTS 4/13
LAYOUT BY	—	RELIABILITY	—
CHECKED BY			
GRP LEADER	W. TRAUT 4/8/66		
VEH DES INT	W. BISCHOFF 4/8		
STRUCTURE	HILDERMANN 4/11	PROJ ENGR	J. ALBER/R.C. 4/13/66
STRUCTURE	—	REL GROUP	C. BOTTI 4/15/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DOUBLER
ASCENT STAGE
MIDSECTION +Z27 BULKHEAD

SIZE B | CODE IDENT NO. 26512 | LDW280-11089 | A (A)

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11089 NO CHG 4/15/66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED NO CHG LAST REV NC M. MARKARIAN 5/23/67 ADDED SHEET 1.00, 1.10 & 2.00						
A	1	1.10 & 3.00	6B					EOA1	IN FLD REVISED TRIM OF -11	LTA-8, LM-1 & LM-2	✓		MARKARIAN 5/23/67	X	X
	2	1.00, 1.10 2.00 & 3.00	3A					EOA2	REMOVED -19			-19			

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURE	STRUCTURE	WEIGHTS	RELIABILITY
	A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11089	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11089-17	E	DOUBLER	AL ALLOY SH	QQ-A-250/12	7075-T6	.032 × 3 × 3	NONE	88	
								LDW280-11089-15	E	DOUBLER	AL ALLOY SH	QQ-A-250/12	7075-T6	.032 × 3 × 3	NONE	88	
								LDW280-11089-13	E	DOUBLER	AL ALLOY SH	QQ-A-250/12	7075-T6	.032 × 4 × 6	NONE	88	
								LDW280-11089-11	E	DOUBLER	AL ALLOY SH	QQ-A-250/12	7075-T6	.032 × 3 × 5	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11089	A

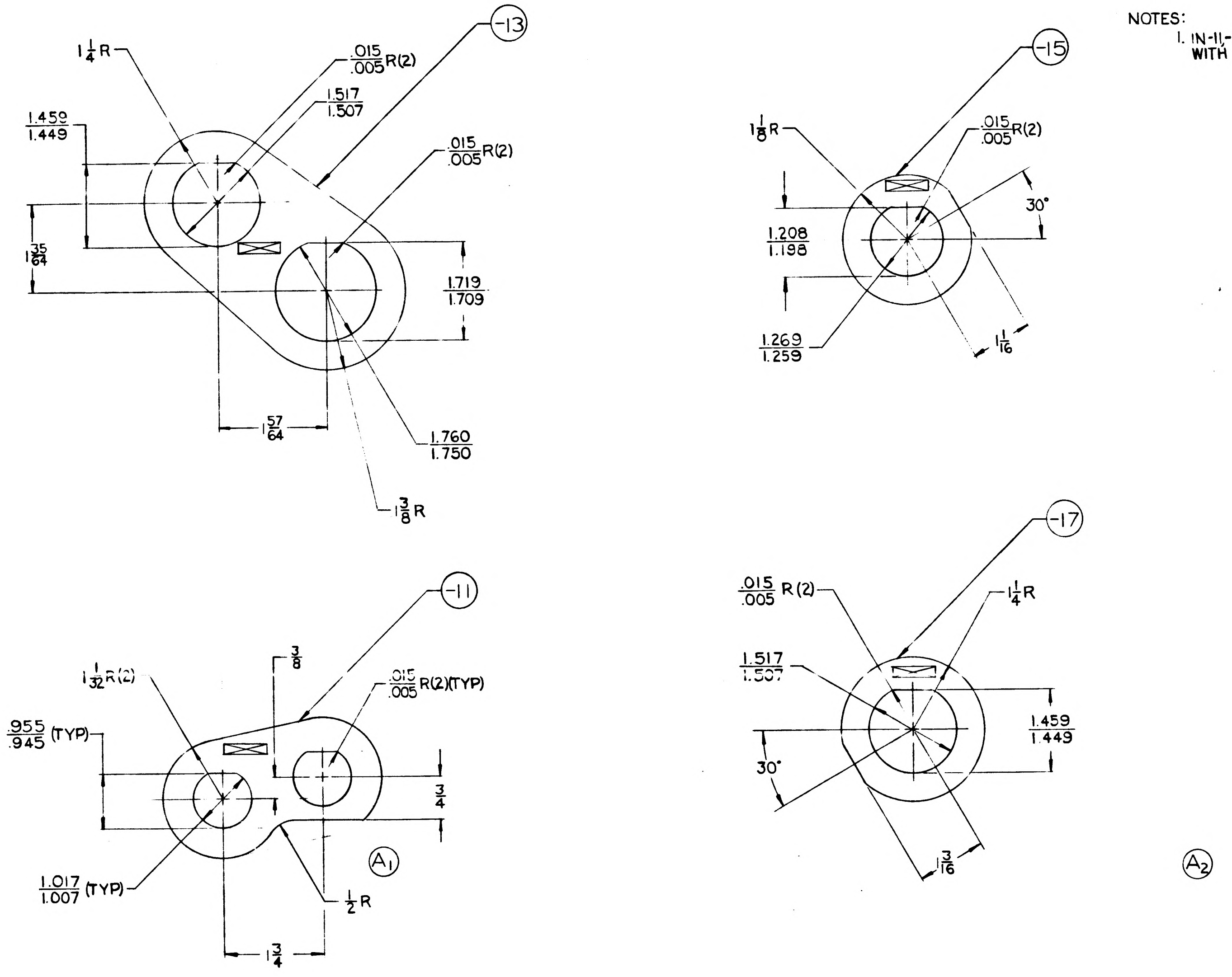
SCALE NONE

SHEET 2.00

ENG 77.2 7-66

01

NAS 9-1100


-13
1 1/4 R
.015/.005 R(2)
1.517/1.507
1.459/1.449
.015/.005 R(2)
1 35/64
1.719/1.709
1 57/64
1.760/1.750
1 3/8 R
-15
1 1/8 R
.015/.005 R(2)
30°
1.208/1.198
1.269/1.259
1 1/16
-11
1 1/32 R(2)
3/8
.015/.005 R(2)(TYP)
.955/.945 (TYP)
3/4
1.017/1.007 (TYP)
1/2 R
1 3/4
A1
-17
.015/.005 R(2)
1 1/4 R
1.517/1.507
1.459/1.449
30°
1 3/16
A2

NOTES:

1. IN -11,-13,-15&-17, HOLES ARE TO BE COORDINATED WITH THE HOLES IN LDW280M10001

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	D	26512	LDW280-11089	A

SCALE FULL

SHEET 3.00

IFR 3

ENG 73-3 6-64

01 NAS 9-1100

LDW280-11090 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28339	LM-2(32)	2
LM	LDW280-28339	LM-1(31)	2
LM	LDW280-28339	LTA-8(18)	2
PART NO. LDW280-11090-15		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28339	LM-2(32)	1 EA
LM	LDW280-28339	LM-1(31)	1 EA
LM	LDW280-28339	LTA-8(18)	1 EA
PART NO. LDW280-11090-11;13;19;23&25		GAEC SCH NO.	

WORK PKG FUNCTION NO. 110. 5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00			2.00		3.00		
REV	A			A		A		
SHEET	1.10							
REV	A							
SHEET								
REV								

LAST SECT LTR USED	~	GRUMMAN REL INFO		
LAST DASH NO. USED	-25	PRIM NO. 215	JK(001) mp-14A 6/29/7	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.005 ±0°30'
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	HARRIGAN 4-7-66		
LAYOUT BY			
~~CHECKED~~ BY	VDI		
GR LDR	W.TRAUT 4-8-66		
VDI	J. Pusateri 4/27		
STRUCTURE	HILDERMAN 4/11	PROJ ENGR	J ALBER/RC 4-13-66
WEIGHTS	LAMORTS 4-13	REL GROUP	BOTTI 4-15-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DOUBLER
ASCENT STAGE ~ MID SECTION
+Z27 BULKHEAD

SIZE	CODE IDENT NO.		
B	26512	LDW280-11090	A Ⓐ
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

SUPERSEDES LDW280-11090 REV NC 4-15-66

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED NO CHG, LAST REV NC ANDRIANI 5-16-67						
A	1	1.00, 1.10 3.00	5D 2C					E.O.A1	ADDED SHEET 1.10 IN FIELD REVISED TRIM OF -11 & -15	LTA-8(18) LM-1(31) LM-2(32)	✓		ANDRIANI 16 MAY 67		
	2	1.00 2.00 3.00	3A					E.O.A2	CANCELLED -17 & ADDED -19			-17			
	3	1.00, 2.00 3.00	7A 7B					E.O.A3	ADDED LDW280-11090-23 & -25.		NOT	REQD			

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-11090	A
SCALE NONE			SHEET 1.10

ENG 77.3 5-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11090-25	E	DOUBLER	AL ALY SH	QQ-A-250/12	7075-T6	.032X3X3	NONE	76	7A
		-23	E					.032X3X3		76	7B
		-19	E					.032X4X7		88	4B
		-15	E					.032X2X2		88	2C
		-13	E					.032X4X4		88	3D
		LDW280-11090-11	E	DOUBLER	AL ALY SH	QQ-A-250/12	7075 T6	.032X4X7	NONE	88	7D

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						76	ALODINE	LSP-14-9010
						38	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B | CODE IDENT NO. 26512 | LDW280-11090 | A Ⓐ

SCALE NONE | SHEET 2.00

ENG 77.2 7-65

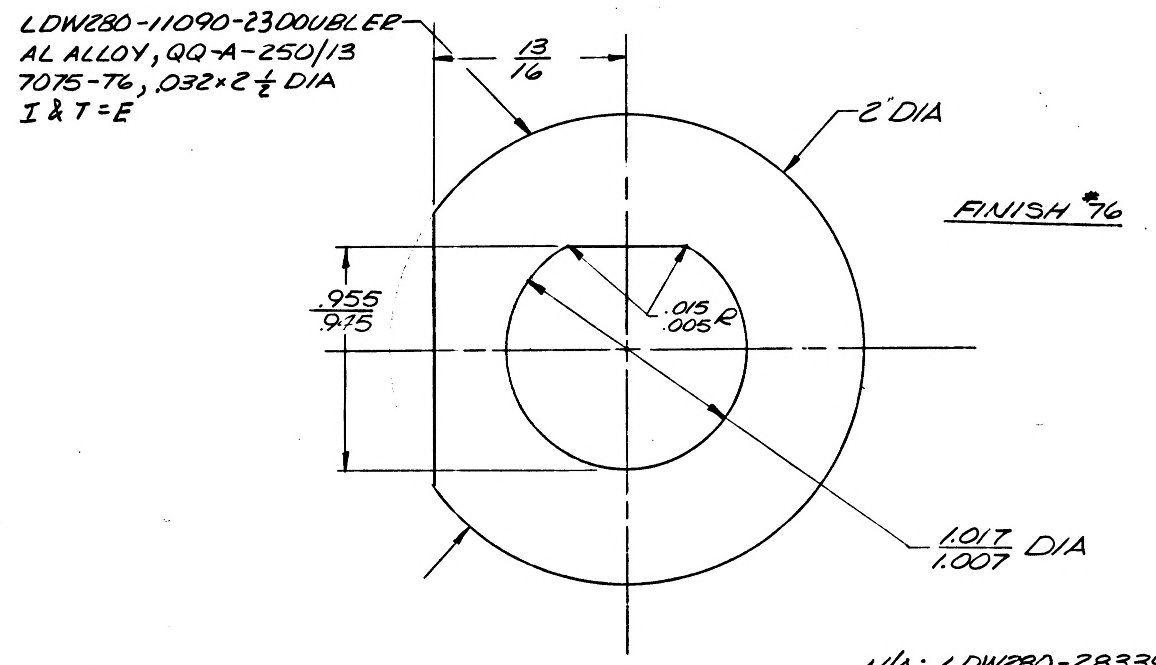
01

NAS 9-1100

ENG 32.2 REV 3-65

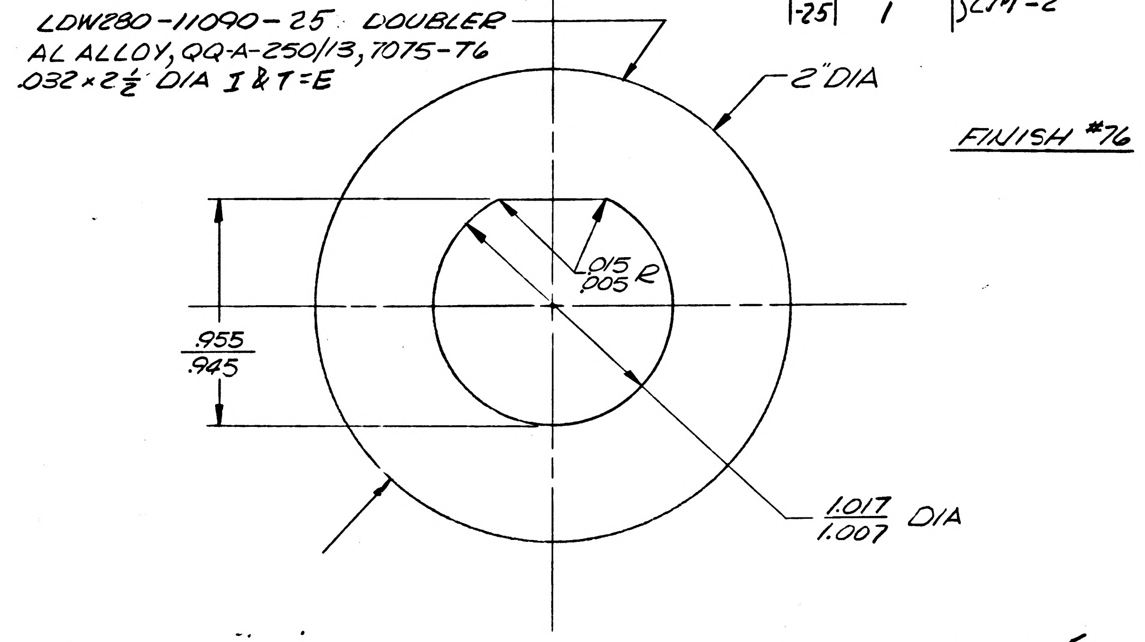
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11090	EO NO. A3
CONTROL INFO NO. LMS-11303	


LDW280-11090-23 DOUBLER
AL ALLOY, QQ-A-250/13
7075-T6, .032×2½ DIA
I & T=E
13/16
2" DIA
FINISH #76
.955/.945
.015/.005 R
1.017/1.007 DIA

N/A: LDW280-28339

	REQD/MOD	
-23	1	LTA-8, LM-1, LM-2
-25	1	


LDW280-11090-25 DOUBLER
AL ALLOY, QQ-A-250/13, 7075-T6
.032×2½ DIA I & T=E
2" DIA
FINISH #76
.955/.945
.015/.005 R
1.017/1.007 DIA

5

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
ADDITIONAL CONNECTORS REQD. FOR RCS REROUTED WIRING (CCA-351)	ADDED LDW280-11090-23 & -25	K

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8 (18)	
		LM-1 (31)	
		LM-2 (32)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY	WT			~	12-7-66	CH		
✓		NOT REQD		DATE	12/7/66			~		12-7-66	12-12	12-7-66
REVISE DWG	RECORD EO	REWORK	SCRAP	/	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	DOUBLER ASCENT-MID SECTION-+Z27 BHD.	LDW280-11090	A3

ISSUED BY Lou Riedell x-6456 12-7-66 SECTION VDI GROUP NO. 335 PL 5

01 NAS 9-1100

LDW280-11091 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28333	LM-2(32)	1EA
LM	LDW280-28333	LM-1(31)	1EA
LM	LDW280-28333	LTA-8 (18)	1EA
PART NO. LDW280-11091-11,-13;15;17&-19		GAEC SCH NO. 32	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV	A	A		A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO A			
LAST DASH NO. USED	-19	PRIM NO.	VE(001)		
		215	MP 6	A-1-1-7	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.010 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	DiMARCO/CARROLL 4-7-66	RELIABILITY	
LAYOUT BY	DiMARCO/CARROLL 4-7-66		
CHECKED BY			
GR LEADER	W. TRAUT 4-7-66		
VEH DES INT	W. BISCHOFF 4-7-66		
STRUCTURE	F E B 4-7-66	PROJ ENGR	J. ALBER/RC 4-12-66
STRUCTURE	HILDERMAN 4-7-66	REL GROUP	BOTTI 4-12-66
WEIGHT	D. ROBESCH DJL 4-11-66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT
ASCENT STAGE MID SECTION -Z27
BULKHEAD PIPING

SIZE	CODE IDENT NO.		
B	26512	LDW280-11091	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-11091 NO CHANGE 4-12-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED NO CHG LAST REV NO CHG T. JESAITIS/C. CASTELLANO 10-28-66 ADDED SHEETS 1.10, 2.00 & 3.00					[illegible] 1-11-67	
A	1	1.00, 110 & 3.00						EO-A1	ADDED #19 HOLE TO -11.	LTA-8, LM-1 & LM-2	✓		Castellano 10-28-66		

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY
	A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11091	A
SCALE NONE			SHEET 1.10

ENG 77.18 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11091-19	E	BRACKET	AL ALY SH	2024-T3	QQ-A-250/4	.032 X 3 X 6	NONE	88	
								LDW280-11091-17		ANGLE	AL ALY SH	2024-T3	QQ-A-250/4	.032 X 3 X 4	NONE	88	
								LDW280-11091-15		ANGLE	AL ALY SH	2024-T3	QQ-A-250/4	.032 X 2 X 3	NONE	88	
								LDW280-11091-13		ANGLE	AL ALY SH	2024-T3	QQ-A-250/4	.032 X 3 X 5	NONE	88	
								LDW280-11091-11	E	BRACKET	AL ALY SH	2024-T3	QQ-A-250/4	.032 X 6 X 7	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP 14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

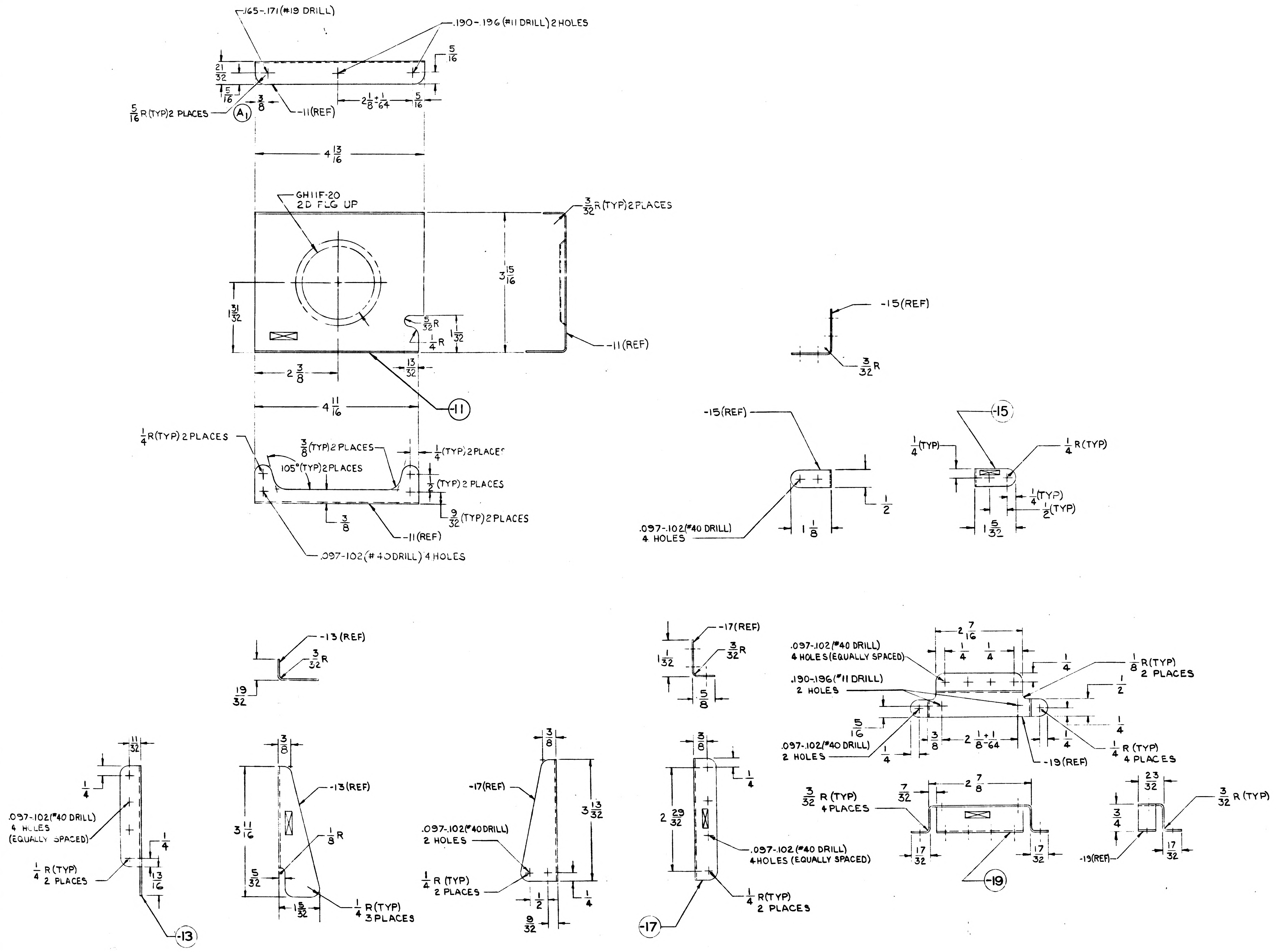
SIZE B
CODE IDENT NO. 26512
LDW280-11091
4

SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


.165-.171 (#19 DRILL)
.190-.196 (#11 DRILL) 2 HOLES
5/16
21/32
5/16
5/16 R (TYP) 2 PLACES
A1
3/8
-11 (REF)
2 1/8 + 1/64
5/16
4 13/16
GH11F-20
2D FLG UP
3/32 R (TYP) 2 PLACES
3 15/16
1 31/32
5/32 R
1/4 R
1 1/32
-11 (REF)
2 3/8
13/32
4 11/16
-11
1/4 R (TYP) 2 PLACES
3/8 (TYP) 2 PLACES
105° (TYP) 2 PLACES
1/4 (TYP) 2 PLACES
1/2 (TYP) 2 PLACES
9/32 (TYP) 2 PLACES
3/8
-11 (REF)
.097-.102 (#40 DRILL) 4 HOLES
-15 (REF)
3/32 R
-15 (REF)
-15
1/4 (TYP)
1/4 R (TYP)
.097-.102 (#40 DRILL)
4 HOLES
1/2
1 1/8
1/4 (TYP)
1/2 (TYP)
1 5/32
-13 (REF)
3/32 R
19/32
-17 (REF)
1 1/32
3/32 R
5/8
.097-.102 (#40 DRILL)
4 HOLES (EQUALLY SPACED)
2 7/16
1/4
1/4
1/4
1/8 R (TYP)
2 PLACES
.190-.196 (#11 DRILL)
2 HOLES
1/2
5/16
3/8
2 1/8 + 1/64
1/4
.097-.102 (#40 DRILL)
2 HOLES
1/4
1/4
1/4 R (TYP)
4 PLACES
-19 (REF)
11/32
1/4
.097-.102 (#40 DRILL)
4 HOLES
(EQUALLY SPACED)
1/4
1/4 R (TYP)
2 PLACES
13/16
-13
3/8
3 11/16
-13 (REF)
1/8 R
5/32
13/32
1/4 R (TYP)
3 PLACES
3/8
-17 (REF)
3 13/32
.097-.102 (#40 DRILL)
2 HOLES
1/4 R (TYP)
2 PLACES
1/2
1/4
9/32
3/8
1/4
2 29/32
.097-.102 (#40 DRILL)
4 HOLES (EQUALLY SPACED)
1/4 R (TYP)
2 PLACES
-17
3/32 R (TYP)
4 PLACES
7/32
2 7/8
17/32
17/32
-19
23/32
3/4
3/32 R (TYP)
-19 (REF)
17/32

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	E	26512	LDW280-11091	A
SCALE			SHEET 3	

LDW280-11091 A

LDW280-11092

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28333	LM-2(32)	IEA
LM	LDW280-28333	LM-1(31)	IEA
LM	LDW280-28333	LTA-8(18)	IEA
PART NO. LDW280-11092-11,-13;15;17&19		GAEC SCH NO.	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO			
LAST DASH NO. USED	-19	PRIM NO.			
		215			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.010 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	DiMARCO/CARROLL 4-7-66	RELIABILITY	
LAYOUT BY	DiMARCO/CARROLL 4-7-66		
CHECKED BY	ACA		
GR LEADER	W.TRANT 4-7-66		
VEH DES INT	W. BISCHOFF 4-7-66		
STRUCTURES	FEB 4-7-66	PROJ ENGR	J.ALBER/RC 4-12-66
STRUCTURES	R.HILDERMAN 4-7-66	REL GROUP	BOTTI 4-12-66
WEIGHTS	DROBESCH 4-11-66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT
ASCENT STAGE MID SECTION-Z27
BULKHEAD PIPING

SIZE	CODE IDENT NO.	
B	26512	LDW280-11092
SCALE NONE		SHEET 1.00 OF 4

ENG 77.1 12-65

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED NO CHG LAST REV NO CHG T. JESAITIS/C CASTELLANO 10-24-66, ADDED SHEET 1.10, 2.00 & 3.00. O.T. WCG EG						

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-11092
SCALE NONE
SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW28C-11092-19	E	ANGLE	ALUM ALY SH	QQ-A-250/4	2024-T3	.032X 2 X 3	NONE	88	
		-17		ANGLE	ALUM ALY SH	QQ-A-250/4	2024-T3	.032X 2X3	NONE	88	
		-15		ANGLE	ALUM ALY SH	QQ-A-250/4	2024-T3	.032X 2X 3	NONE	88	
		-13		BRACKET	ALUM ALY SH	QQ-A-250/4	2024	.032X 7X7	T3/T42	88	
		LDW280-11092-11	E	BRACKET	ALUM ALY SH	QQ-A-250/4	2024-T3	.032X 4 X 5	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						38	ANODIZE	LSP14-9030
						T42	AL HEAT TREAT	MIL-H-6088

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

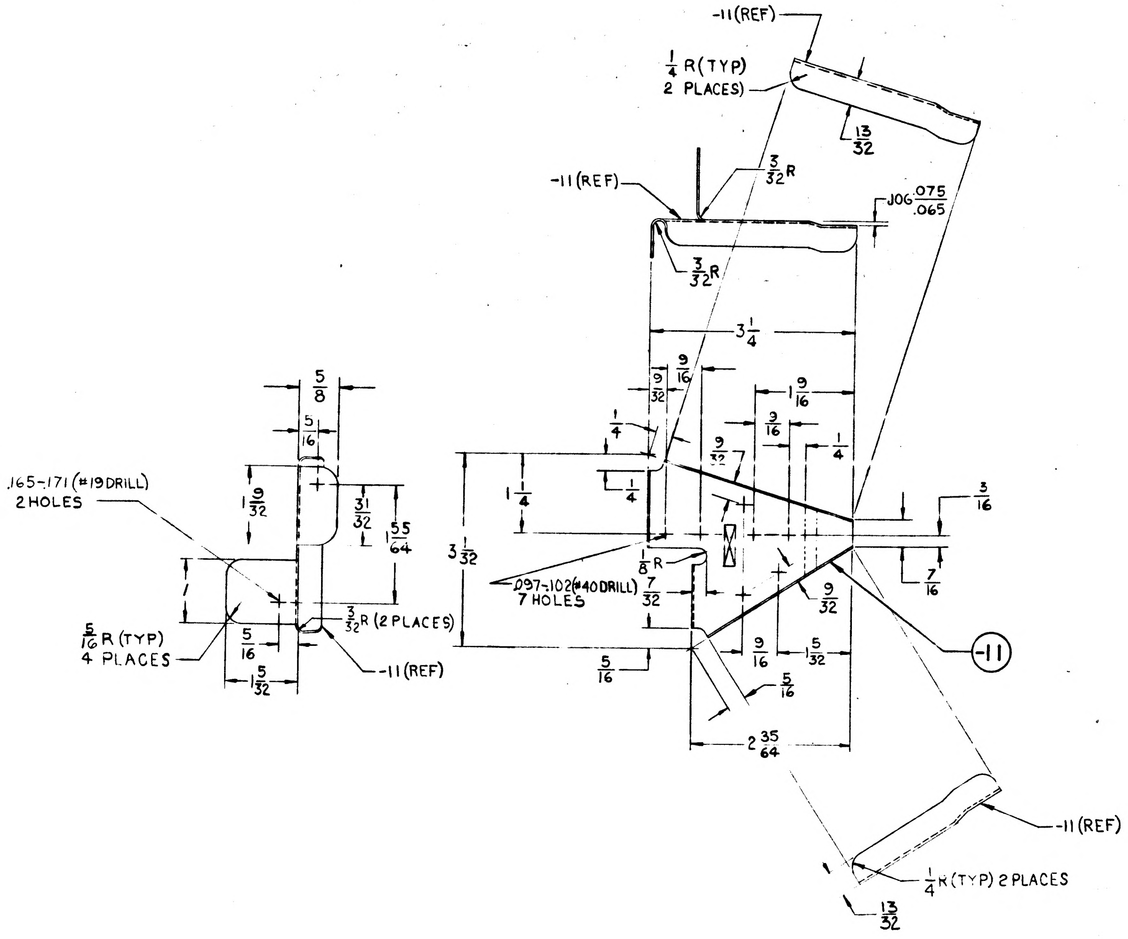
SIZE	CODE IDENT NO.	
B	26512	LDW280-11092

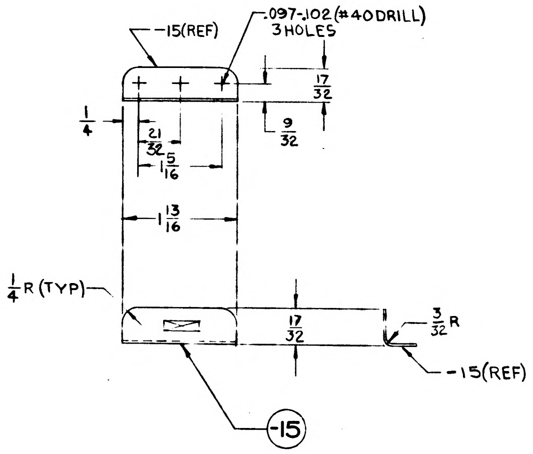
SCALE NONE
SHEET 2.00

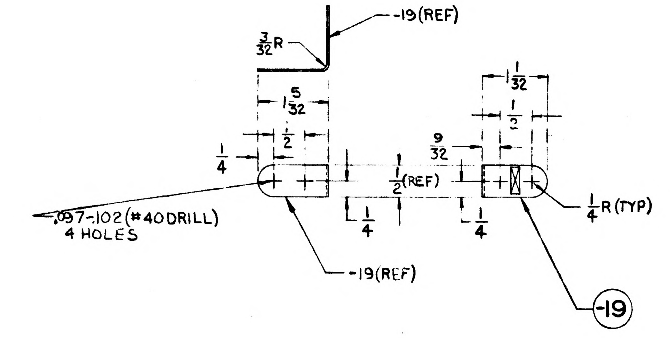
ENG 77.2 7-65

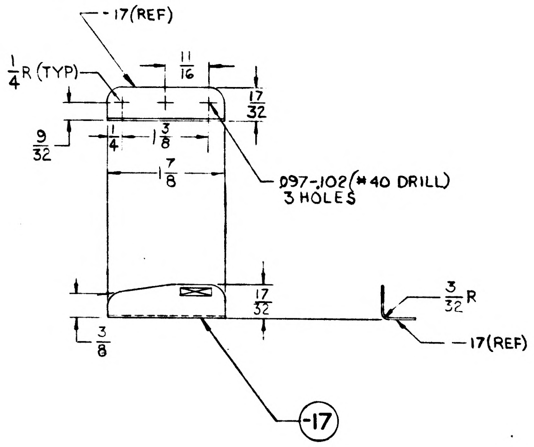
01

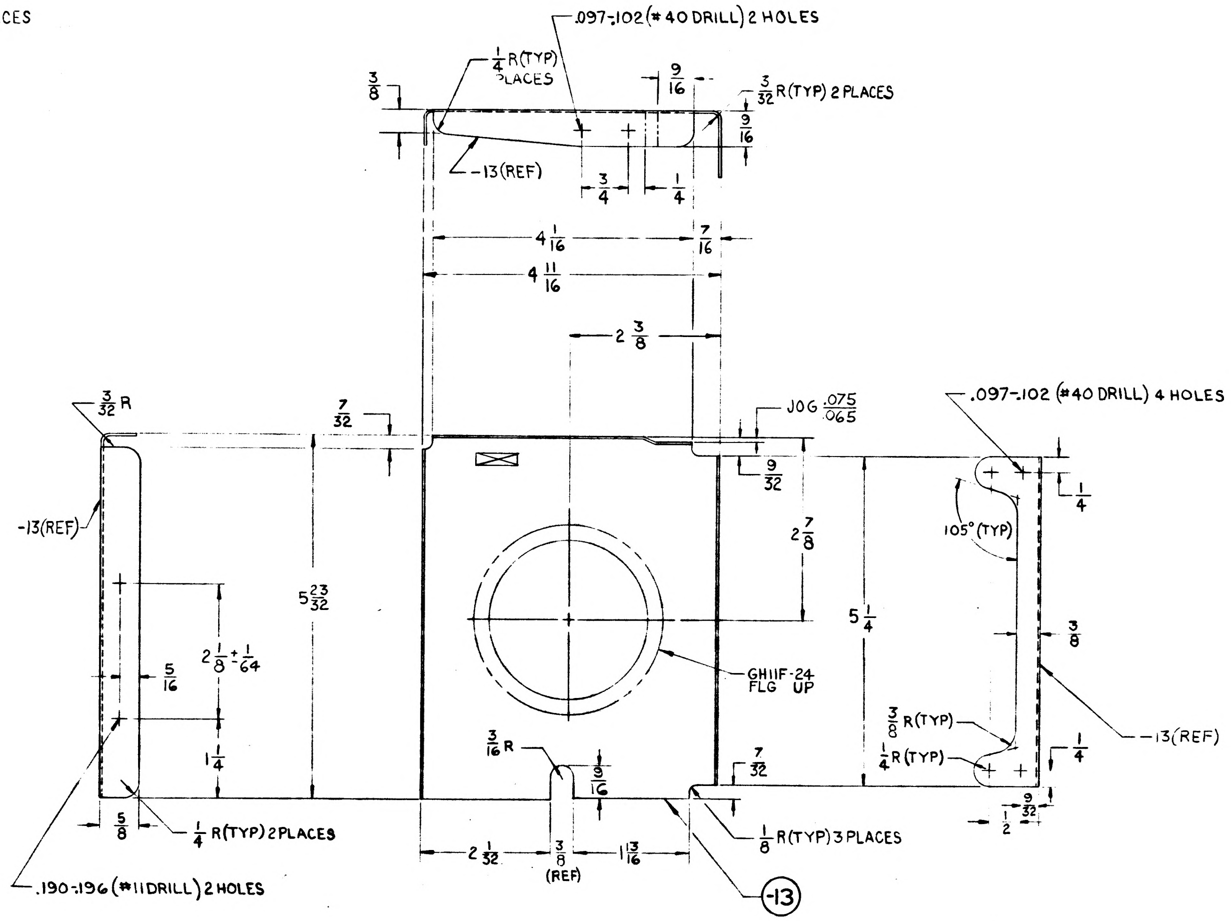
NAS 9-1100


-11(REF)
1/4 R(TYP) 2 PLACES
13/32
3/32 R
JOG .075/.065
3 1/4
.165-.171 (#19 DRILL) 2 HOLES
5/16 R (TYP) 4 PLACES
3/32 R (2 PLACES)
.097-.102(#40 DRILL) 7 HOLES
2 35/64
1/4 R(TYP) 2 PLACES
-11


-15(REF)
.097-.102(#40 DRILL) 3 HOLES
17/32
9/32
1 13/16
1/4 R(TYP)
3/32 R
-15(REF)
-15


3/32 R
-19(REF)
1 5/32
1/2(REF)
.097-.102(#40 DRILL) 4 HOLES
1/4 R(TYP)
-19(REF)
-19


-17(REF)
1/4 R (TYP)
11/16
17/32
1 3/8
1 7/8
.097-.102(#40 DRILL) 3 HOLES
3/32 R
-17(REF)
-17


.097-.102(#40 DRILL) 2 HOLES
1/4 R(TYP) 2 PLACES
3/32 R(TYP) 2 PLACES
-13(REF)
4 1/16
4 11/16
2 3/8
3/32 R
JOG .075/.065
.097-.102 (#40 DRILL) 4 HOLES
-13(REF)
5 23/32
2 7/8
105° (TYP)
5 1/4
GH11F-24 FLG UP
2 1/8 + 1/64
3/8 R(TYP)
1/4 R(TYP)
-13(REF)
3/16 R
1/4 R(TYP) 2 PLACES
1/8 R(TYP) 3 PLACES
.190-.196(#11 DRILL) 2 HOLES
2 1/32
3/8 (REF)
1 13/16
-13

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD 10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

01

NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK		
	SIZE E	CODE IDENT NO. 26512	LDW280-11092
LM MODEL OR END ITEM	SCALE FULL		SHEET 3 OF

LDW280-11092

LDW280-11092

LDW280-11093 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280 23031	LM-15 (45)	1
		LM-14 (44)	1
		LM-13 (43)	1
		LM-12 (42)	1
		LM-11 (41)	1
		LM-10 (40)	1
		LM-9 (39)	1
		LM-8 (38)	1
		LM-7 (37)	1
		LM-6 (36)	2
		LM-5 (35)	2
		LM-4 (34)	2
	LDW280-23031	LM-3 (33)	2
	LDW280-28031	LM-2 (32)	1
	LDW280-28031	LM-1 (31)	1
LM	LDW280 28031	LTA 8 (18)	1

PART NO. LDW280-11093-13 | GAEC SCH NO. 31

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23031	LM-15 (45)	1 EA
		LM-14 (44)	1 EA
		LM-13 (43)	1 EA
		LM-12 (42)	1 EA
		LM-11 (41)	1 EA
		LM-10 (40)	1 EA
		LM-9 (39)	1 EA
		LM-8 (38)	1 EA
		LM-7 (37)	1 EA
		LM-6 (36)	1 EA
		LM-5 (35)	1 EA
		LM-4 (34)	1 EA
	LDW280-23031	LM-3 (33)	1 EA
	LDW280-28031	LM-2 (32)	1 EA
	LDW280-28031	LM-1 (31)	1 EA
LM	LDW280-28031	LTA-8 (18)	1 EA

PART NO. LDW280-11093-11 & -15 | GAEC SCH NO. 31

WORK PKG FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10		2.00		3.00			
REV	A	A		A		A			
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -15

GRUMMAN REL INFO A

PRIM NO. 215 | JK(001) | MF-1A 6/5/

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.010

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM

DOCUMENTATION TYPE II

DRAWN BY	DARIST	RELIABILITY	
LAYOUT BY	DARIST		
CHECKED BY	JG 6-3-68		
GP LEADER	WT 4-13-66		
VEH DES INT	WB 4-12-66		
STRUCT	FEB 4-13-66	PROJ ENGR	ALBER 4-18-68
STRUCT		REL GROUP	MARTIN 4-14-68
WEIGHTS			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DOUBLER
ASCENT STAGE CABIN - IMU BEAM

SIZE B | CODE IDENT NO. 26512 | LDW280-11093 | A

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
A	1	1.00, 1.10, 2.00, 3.00						EOA1	EOA1 INITIAL DWG. RELEASE PARTS MADE PER EO	LTA-8, LM-1 LM-2	NOT	REQD	LEVINE 5-29-68		
	2	1.00, 2.00 3.00						EOA2	CREATED -13						
	3	1.00						EOA3	ON -13 : ADDED LM-3 THRU LM-6 (2) REQ/MOD	LM-3 THRU LM-6					
	4	1.00						EOA4	IN M/B : ADDED -11 & -15 EFF. FOR LM-3 THRU LM-6, N/A LDW280-23031, (1) REQD/MOD.						
	5	1.00						LEO280-465 ⓛ	FOR -11, -13 & -15 : ADDED EFF. LM-7 THRU LM-15, N/A LDW280-23031, (1) REQD/MOD.	LM-7 THRU LM-15					

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCT	STRUCT	WEIGHTS	RELIABILITY
	A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11093	A Ⓐ

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11093-15	E	DOUBLER	AL ALY SH	QQ-A-250/4	2024-T3	.020 × 3 × 5	NONE	88	
		LDW280-11093-13	E	DOUBLER	AL ALY SH	QQ-A-250/4	2024-T3	.040 × 2 × 2	NONE	76	
		LDW280-11093-11	E	DOUBLER	AL ALY SH	QQ-A-250/4	2024-T3	.028 × 3 × 8	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						76	ALODINE	LSP-14-9010
						88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11093	A

SCALE NONE

SHEET 2.00

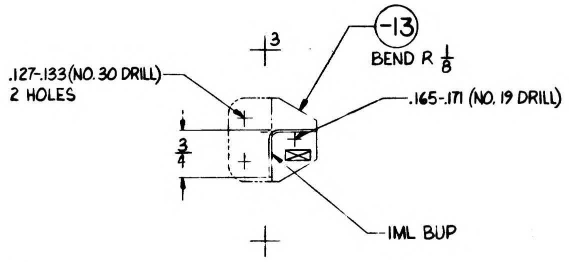
ENG 77.2 7-55

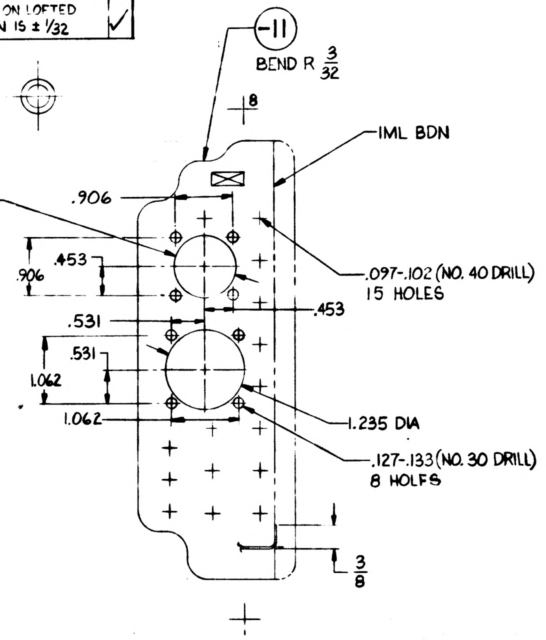
01

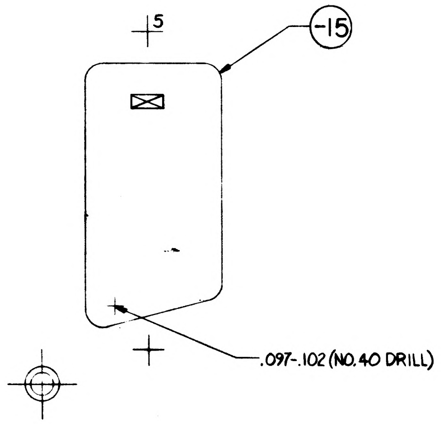
NAS 9-1100

LDW280-11093 A

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY~~	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	
TOLERANCE ON LOFTED DELINEATION IS ± 1/32	✓


-13
BEND R 1/8
.127-.133 (NO. 30 DRILL) 2 HOLES
.165-.171 (NO. 19 DRILL)
3/4
3
IML BUP


-11
BEND R 3/32
8
IML BDN
.985 DIA
.906
.906
.453
.097-.102 (NO. 40 DRILL) 15 HOLES
.453
.531
.531
1.062
1.062
1.235 DIA
.127-.133 (NO. 30 DRILL) 8 HOLFS
3/8


5
-15
.097-.102 (NO. 40 DRILL)

25

15

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714

SIZE	CODE IDENT NO.		
D	26512	LDW280-11093	A
SCALE FULL			SHEET 3.00

ENG 73.3 REV. 5-67

FOR PHOTO REPRODUCTION

K2

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512 EHF-A
ENGINEERING ORDER

DWG. NO. LDW280-11093 EO NO. B1
CONTROL INFO NO. LM-2-3264

IN MODEL BLOCK FOR -11, -13 & -15 ADD LM-7(37) THRU LM-15(45) EFFECTIVITY
(SAME NEXT ASSY & QUANTITY AS FOR LM-6)

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐ ✓

REASON FOR EO: ADDITIONAL EFFECTIVITY REQUIRED

DESCRIPTION OF EO: IN MOD/BLK FOR -11, -13 & -15, ADDED LM-7(37) THRU LM-15(45) EFFECTIVITY

GAEC EO RELEASE: ✓

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-7(37)	
		THRU	
		LM-15(45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS											
✓		NOT	REQD	APPROVED BY				—					
				DATE	2/5/67			—	1/26/67	1/26/67		1/27/67
REVISE DWG	RECORD EO	REWORK	SCRAP	-6-	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C
DRAWING TITLE: DOUBLER~ASCENT STAGE CABIN~IMU BEAM
DRAWING NO.: LDW280-11093
EO NO.: B1

ISSUED BY LIAISON J. MALONEY 1/26/67 SECTION V.D.I. GROUP NO. 335 PL 35

01

NAS 9-1100

LDW280-11094

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53020	LEM-3(33)	1
PART NO. LDW280-11094-11		GAEC SCH NO. 324	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO	
LAST DASH NO. USED	-11	PRIM NO. 215	LE(001) MP 12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.010 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	G.PELLEGRINO 4/7/66	RELIABILITY	
LAYOUT BY	G.WHISTON 4/7/66		
CHECKED BY	G.PELLEGRINO 4/7/66		
GR LEADER	JRP PHILLIPS 4/14/66		
VEH DES INT	W.BISCHOFF 4/14/66		
STRUCT	FEB BW 4/14/66	PROJ ENGR	J.ALBER RMC 4/20/66
STRUCT	HILDERMAN 4/14/66	REL GROUP	BOTTI 4/22/66
WEIGHTS	D.ROBESCH DJL 4/19/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
LID H CANNISTER SUPPORT
Y17.25 , Z 0.0

SIZE B
CODE IDENT NO. 26512
LDW280-11094
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE LAST REVISION NO CHANGE. SH. 1 OF 4 WAS 1 OF 1. EG	NOT REQD	NOT	REQD	JAEGGI 5-24-66		

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-66

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-11094	
SCALE NONE		SHEET 1.10	

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11094-11	E	BRACKET	AL ALLOY SH	QQ-A 250/12	7075	.050 x 1 3/4 x 3	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
			T6	AL HEAT TREAT	MIL-H-6088	88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

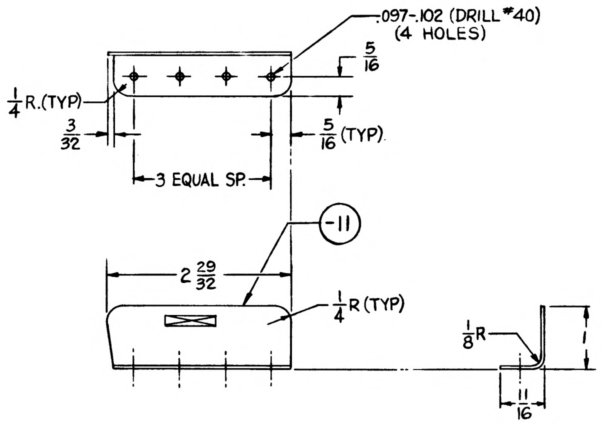
SIZE B
CODE IDENT NO. 26512
LDW280-11094
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

LDW280-11094



NOTES:
1-NO TOOLING HOLES PERMITTED IN PART

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMPPART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 ▽ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 ▽ FOR ALL DRILLED HOLES	✓
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LEM	C	26512	LDW280-11094
	SCALE FULL		SHEET 3.00

LDW230-11094

NAS 9-1100

LDW280-11095 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23026	LEM-15(45)	2
	-23026	LEM-14(44)	2
	-23026	LEM-13(43)	2
	-23026	LEM-12(42)	2
	-23026	LEM-11(41)	2
	-23026	LEM-10(40)	2
	-23026	LEM-9(39)	2
	-23026	LEM-8(38)	2
LEM	-23026	LEM-7(37)	2
LTT430-20630	-28026	1 & SUBQ	2
LTT430-20620	-28026	1 & SUBQ	2
LTT430-20630	-23341	1 & SUBQ	2
LTT430-20620	-23341	1 & SUBQ	2
LEM	-23026	LEM-6(36)	2
	-23026	LEM-5(35)	2
	-23026	LEM-4(34)	2
	-23026	LEM 3(33)	2
	-28026	LEM-2(32)	2
	-28026	LEM-1(31)	2
	-28026	LTA-8(18)	2
LEM	LDW280-23026	LTA 3(13)	2

PART NO. LDW280-11095-17 | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO. | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23341	LEM-15(45)	2EA
		LEM-14(44)	2EA
		LEM-13(43)	2EA
		LEM-12(42)	2EA
		LEM-11(41)	2EA
		LEM-10(40)	2EA
		LEM-9(39)	2EA
		LEM-8(38)	2EA
LEM	LDW280-23341	LEM-7(37)	2EA
LTT430-20630	LDW280-28026	1 & SUBQ	2 EA
LTT430-20620	LDW280-28026	1 & SUBQ	2 EA
LTT430-20630	LDW280-23341	1 & SUBQ	2 EA
LTT430-20620	LDW280-23341	1 & SUBQ	2 EA
LEM	LDW280 23341	LEM-6(36)	2EA
LEM	LDW280-23341	LEM-5(35)	2EA
LEM	LDW280-23341	LEM-4(34)	2EA
LEM	LDW280-23341	LEM-3(33)	2EA
LEM	LDW280-23341	LEM-2(32)	2EA
LEM	LDW280 23341	LEM-1(31)	2EA
LEM	LDW280-23341	LTA-8(18)	2EA
LEM	LDW280-23341	LTA 3(13)	2EA

PART NO. LDW280-11095-11, 13 & -15 | GAEC SCH NO.

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A		A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -17

GRUMMAN REL<INFO A

PRIM NO. 215 | LE(001) | MP-A | 8-8-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	SUPPA 4-9-66	RELIABILITY	
LAYOUT BY	BRANDT MB 4-11		
CHECKED BY	Hut 4-9-66		
GR LEADER	W Phillips 4/11/66		
VEH DES INT	[illegible]		
STRUCTURES	[illegible] 4/13	PROJ ENGR	[illegible] 4-18-66
STRUCTURES	Hilderman 4/13	REL GROUP	[illegible] 4-20-66
WEIGHTS	[illegible] 4/13		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TRUSS
ASCENT STAGE-REACTION CONTROL SYSTEM:
& DRAIN VALVE SUPPORT

SIZE	CODE IDENT NO.		
B	26512	LDW280-11095	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10 & 3.00	6H					EO A1	ON-17 ADDED 6 PILOT HOLES. SH 1 OF 4 WAS SH 1 OF 3, ADDED SH 1.10.	LTA-3,-8, LEM-1 -2,-3,-4,-5 & -6	✓		A. BEERS 7-13-66		
	2	1.00 & 1.10						LE0280-104	FOR -11, -13, -15 & -17 ADDED EFFECTIVITY OF LTT430-20620 AND LTT430-20630.	1 & SUBQ	NOT	REQD			
	3								REF LE0280-104 QUANTITY TO BE THE SAME AS EXISTING DASH NUMBER.						
	4	1.00, 1.10							ADDED LEM-7 THRU-15 EFF, 2 REQD/MOD. FOR-11 THRU-17 EG	LEM-7 THRU-15			JAEGGI 7-25-66		

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY
A		R.V.Phillips 8-3				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11095	A

SCALE NONE

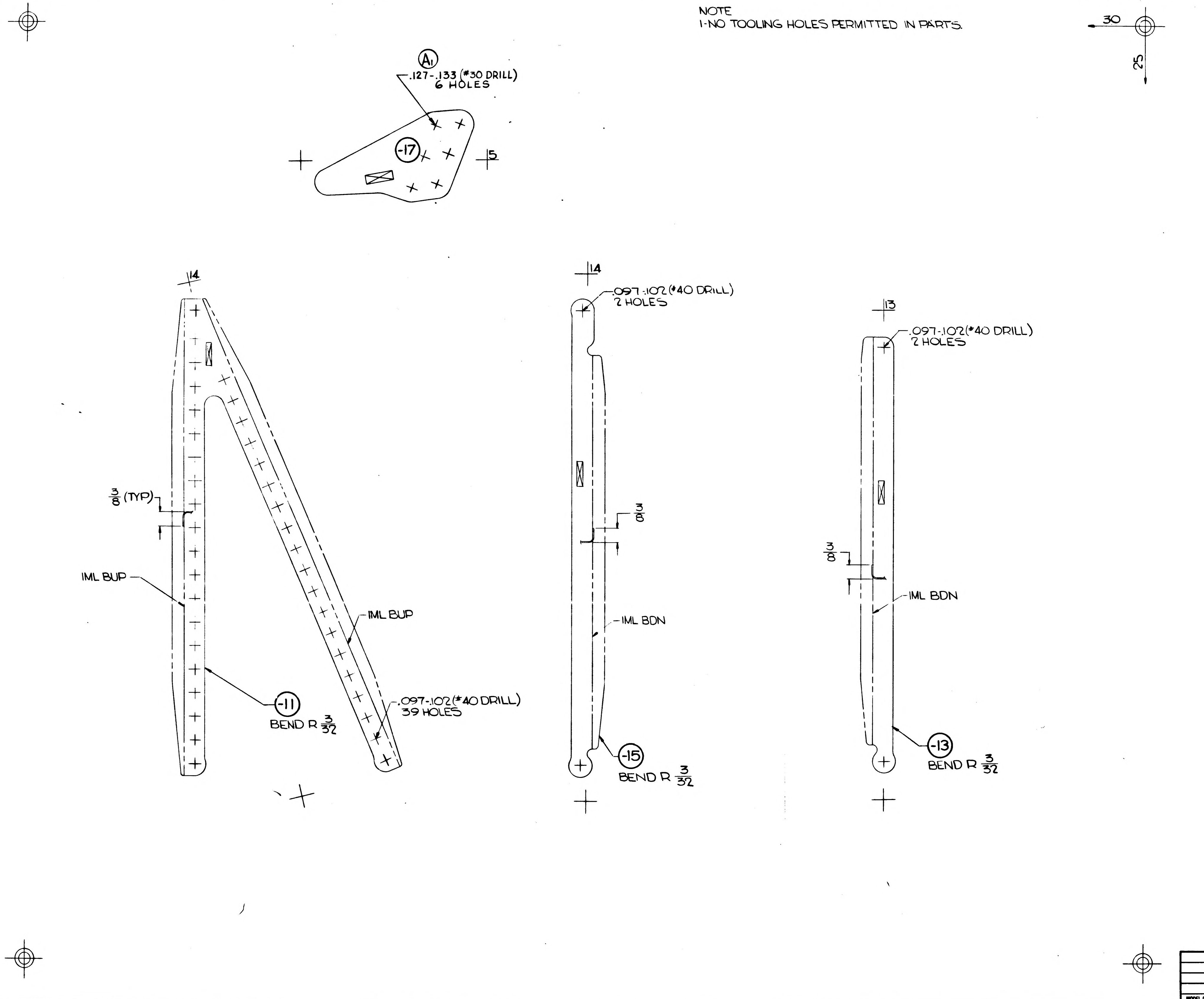
SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

NOTE
1-NO TOOLING HOLES PERMITTED IN PARTS.



30
25
(A1)
.127-.133 (#30 DRILL)
6 HOLES
-17
.5
.14
.097-.102 (#40 DRILL)
2 HOLES
.14
.13
.097-.102 (#40 DRILL)
2 HOLES
3/8 (TYP)
IML BUP
IML BUP
3/8
3/8
IML BDN
IML BDN
-11
BEND R 3/32
.097-.102 (#40 DRILL)
39 HOLES
-15
BEND R 3/32
-13
BEND R 3/32

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
$\overline{125}\surd$ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
$\overline{200}\surd$ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-11095A

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE F	CODE IDENT NO. 26512	LDW280-11095	R A
MODEL OR END ITEM	SCALE FULL		SHEET 300

FOR PHOTO REPRODUCTION

K2

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11095-17		GUSSET	AL ALLOY SH	QQ-A-250/12	7075-T6	.063x2 1/8x5	NONE	88	
		-15		ANGLE	↕	↕	7075	.032x1 5/8x13 1/2	T6	↕	
		-13		ANGLE	↕	↕	7075	.032x1 5/8x12 3/8	T6	↕	
		LDW280-11095-11		TRUSS	AL ALLOY SH	QQ-A-250/12	7075	.032x7x13 1/2	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	AL HEAT TREAT	MIL-H-6088
88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11095

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

ENG 32.2 REV 3-65

*

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER EMF 4

DWG. NO. LEO-280 | EO NO. 442
CONTROL INFO NO. LM-2-3201

FOR THE LISTED DASH NUMBERS OF THE FOLLOWING DRAWINGS EFFECTIVE LM4(34) THRU LM-15(45) NEXT ASSEMBLY LDW280-23026 SHOULD BE LDW280-54026

DRAWING NUMBER	DASH NUMBER	CHANGE NUMBER	TITLE
✓ LDW280- 10370	-19	D2	SEE DRAWING
✓ 10407	-17; -19	D1	
✓ 10426	-11	C1	
✓ 10522	-11; -5 & -16	B2	
✓ 10546	-15; -19; -21 & -23	B6	
✓ 10547	-11; -13 & -17	B3	
✓ 10548	-13	C2	
✓ 10549	-17; -18 & -19	D2	
✓ 10555	-11; -13 & -15	B2	
✓ 10556	-15	C2	
✓ 10577	-11	B2	
✓ 10582	-11 & -13	B3	
✓ 10751	-21; -23 & -27	C6	
10846	-13; -15; -16; -19; -21 & -23	C2	
11095	-17	B1	
11103	-15	A2	
11531	-11	B2	
LDW280- 11532	-11 & -15	A4	
LDW280H-10536	-1 & -3	C2	
LDW280M-10056	-3	D2	
-10553	-1	B3	
-10568	-1	C2	
-10581	-1 & -2	B2	
-10593	-1	A2	
-10657	-2	B2	
-10688	-1	B2	
LDW280M -10979	-1	A2	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF EO.

2

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: TO AGREE WITH: LDW280-54026 NEXT ASSY. REQ.S

DESCRIPTION OF EO: FOR DASH * NEXT ASSY. LDW280-54026 WAS LDW280-23026

GAEC EO RELEASE: C

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-4 (34)	
		THRU	
		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK ✓ SCRAP

APPROVED BY	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
				caw	caw		
DATE -6-				1/11/67	1/11/67	1-16-67	1-12-67

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LEO-280
EO NO.: 442

ISSUED BY LIAISON T.J. MARTIN X3604 1-10-67 SECTION V.D.I. GROUP NO. 335. PL 35

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NAS 9-1100

C

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

*

DWG. NO. LDW280-11095
EO NO. B2
CONTROL INFO NO. LDW280A 6398

IN MOD BLOCK FOR -17
REMOVED N/A LDW280-28067, 'LTA-8', 2 REQ'D/VEH.

3

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐

REASON FOR EO	DESCRIPTION OF EO	GAEC C EO RELEASE
REQUIREMENTS DELETED	FOR-17 - REMOVED LTAB EFF.	JK 4/29/7

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LTA-8(18)	

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY / DATE		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
✓			✓	4/18/67 6	VDI			F.D.R. 4/17/67	CW 4-21-67		4/25/67	4-28-67

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	TRUSS- A/S, RCS, DRAIN VALVE SUPPORT	LDW280-11095	B2

ISSUED BY F. BADE X7033 4/12/67 SECTION VEH. DES. INT GROUP NO. 335 PL 25

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NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512 *
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LEO 280 | EO NO. 608
CONTROL INFO NO. LM-3-5151

DRAWING NO	CHG.	DESCRIPTION OF CORRECTION	EFFECT.
✓LDW280-52012	F8	ON INCORP. OF E.O. F7 LDW280-28079-3-1 WAS LDW280-28079-5	LM-2 (32)
✓LDW280-11095	B3	ON INCORP. OF E.O. B2 N/A LDW280-28026 WAS LDW280-28067 (IN ERROR)	LTA-8 (18)
LDW280-11738	C3	ON INCORP. OF E.O. C1 -35 ASSY WAS -11 ASSY. (-11 PREVIOUSLY USED & SCRAPED.)	LM-3 (33) THRU LM-15 (45)
LDW280-53186	B3	ON INCORP. OF E.O. A10 LDW 280-11738-35 ASSY WAS LDW280-11738-11 ASSY	LM-3 (33). THRU LM-15 (45)
LDW280-53012	C3	ON INCORP. OF E.O. C2 LDW 280-53079-3-1 WAS LDW 280-53079-5	LM-3 (33).

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

3

REASON FOR EO: PROVIDE MULTIPLE DRAWING CORRECTIONS.

DESCRIPTION OF EO: NOTED

GAEC EO RELEASE: Ⓟ Ⓒ
J/K

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOTED	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG	RECORD EO	REWORK	SCRAP
✓		NOT REQD	

APPROVED BY	JWP			—	—		DAN	RP
DATE	7/5/67			—	—		5-31-67	5/31/67
6	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C
DRAWING TITLE: SEE DRAWING
DRAWING NO.: LEO 280
EO NO.: 608

ISSUED BY LIAISON / VIC BOLLO X2151 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 837
CONTROL INFO NO. LDW 280B-0903

FOR THE FOLLOWING DWGS; FOR DASH No. NOTED *
ADD EFF: LFM-50 & PA-1(47) & NEXT ASSY.

LFM

(* USE APPLICABLE DASH NO. IN DESCRIPTION OF E.O.)

DWG. No.	DASH No.	No. REQD.	CHG. NO.	NEXT ASSY.
LDW280-10370	-19	2	D5	LDW280-54026
-10407	-17-19	2 EA.	D3	
-10426	-11	4	C2	
-10522	-11 -15,-16	2 4 EA.	B5	
-10546	-21-23-15,-19	2 EA.	C1	
-10547	-11-15 -13-17	10 2 EA.	B4	
-10548	-13	4	C3	
-10549	-11,-17-18 -19	2 EA. 8	D3	
-10555	-11-17 -13-15	4 2 EA.	B4	
-10556	-15	4	C3	
-10577	-11-13	2 EA	B3	
-10582	-11-13	2 EA.	B4	
-10751	-21-23-27	2 EA.	D2	
-10755	-13-23-19-21-25	2 EA.	C1	
-10846	-19,-21,-13 -23,-15,-16	1 EA 2 EA	C3	LDW280-54026
-11095	-17 -11,-13,-15	2 2 EA	B4	LDW280-54026 LDW280-23341
-11103	-15	2	A3	LDW 230-54026
-11531	-11	2	B3	LDW 230-54026
-11532	-11-15	2 EA.	A5	LDW 230-54026
-11096	-15-11-13	2	B2	LDW 280-23340
-11103	-11-13	2 EA.	A3	LDW 280-23340
-11015	-1-13 -15-17	4 EA. 8 EA.	B4	LDW 280-23278
-10978	-1-2	1 EA.	B3	LDW 230-23278
-11073	-13-15	2 EA.	A3	LDW280H10536
LDW280-10711	-11-13-15-17	2 EA.	B2	LDW 280H10536
LDW280H10752	-11-13	2 EA.	A2	LDW 280H10536
LDW280-14235	-11 -15-19 -17	8 2 EA. 1	A4	LTM 280-26963 LTM230-26969
-14255	-11-12	1 EA.	B1	LTM280-26963
-10790	-11-12 -15-17-18 -19-21-22	1 EA. 1 EA.	B6	
-10789	-25,-26,-27-28-29 -31-32	1 EA. 1 EA.	A6	
-11907	-11-13-15-17-21-23	1 EA.	B2	
LDW280-11882	-13-15-17-19-21	1 EA.	B1	LTM280-26963
LDW280H10536	-1-3	2 EA.	C4	LDW280-54026
LDW280-23328	-1	2	B5	LDW280-54026
LDW280-23278	-1-2	1 EA	C6	LDW280-23328
LDW280-23341	-1	2	A4	LDW280-23328
LDW280-23340	-1	2	A2	LDW 280-23328

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	✓ LCD #2019 CCA 667

REASON FOR EO: UPDATE PA-1(47) TO LM-3 (33) CONFIG.

DESCRIPTION OF EO: FOR * ADDED PA-1(47) EFF.

GAEC EO RELEASE

MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY							
	~~PROCURING ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.	✓ REVISE DWG	RECORD EO	NOT REQ REWORK	SCRAP	DATE	1/5/68					1/10/68	
LM	LFM #50	PA-1(47)						—	VD1	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	NOTED ABOVE	LEO 280	837

1-9
ISSUED BY W. FAULK SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11096 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23340	LEM-15(45)	2
		LEM-14(44)	2
		LEM-13(43)	2
		LEM-12(42)	2
		LEM-11(41)	2
		LEM-10(40)	2
		LEM-9(39)	2
		LEM-8(38)	2
LEM	LDW280-23340	LEM-7(37)	2
LTT430-20630	LDW280-51340	1 & SUBQ	2
LTT430-20620	LDW280-51340	1 & SUBQ	2
LEM	LDW280-23340	LEM-6(36)	2
LEM	LDW280-23340	LEM-5(35)	2
LEM	LDW280-23340	LEM-4(34)	2
LEM	LDW280-23340	LEM-3(33)	2
LEM	LDW280-23340	LTA-3(13)	2
LEM	LDW280-51340	LEM-2(32)	2
LEM	LDW280-51340	LEM-1(31)	2
PART NO. LDW280-11096-15		GAEC SCH NO. 32-7 35	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LTT430-20630	LDW280-51026	1 & SUBQ	2
LTT430-20620	LDW280-51026	1 & SUBQ	2
LEM	LDW280-51026	LEM-2(32)	2
LEM	LDW280-51026	LEM-1(31)	2
PART NO. LDW280-11096-17		GAEC SCH NO. 35-	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LTT430-20630	LDW280-51340	1 & SUBQ	2 EA
LTT430-20620	LDW280-51340	1 & SUBQ	2 EA
LEM	LDW280-51340	LEM-2(32)	2 EA
LEM	LDW280-51340	LEM-1(31)	2 EA
PART NO. LDW280-11096-11,-13		GAEC SCH NO. 35-	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A							
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A		
LAST DASH NO. USED	-17	PRIM NO.	LE(001)	
		215	MP-A	8-31-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO.	NAS9-100	LINE ITEM 1	DOCUMENTATION TYPE II
DRAWN BY	D. PALMER 4-8-66	RELIABILITY	
LAYOUT BY	BRANDT 4-11		
CHECKED BY	4-9-66		
GR. LEADER	4/11/66		
VEH DES INT	4/11		
STRUCTURES	4/13	PROJ ENGR	4-19-66
STRUCTURES	4/13	REL GROUP	4-20-66
WEIGHTS	4-18		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TRUSS
ASCENT STAGE-RCS FILL & DRAIN VALVE SPT

SIZE	CODE IDENT NO.		
B	26512	LDW280-11096	A
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 12-65

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
A	1	1.00 & 1.10						LE0280-104	FOR -11, -13, -15 & -17 ADDED EFFECTIVITY OF LTT430-20620 AND LTT430-20630. SH 1 OF 4 WAS SH 1 OF 3, ADDED SH 1.10.	1 & SUBQ	NOT	REQD	A. BEERS 7-13-66	☒	☒
	2								REF LE0280-104 QUANTITY TO BE THE SAME AS EXISTING DASH NUMBERS.						
	3	1.00, 1.10							FOR-11, -13, -15, -17 ADDED LEM-7 THRU LEM-15. GB WCG	LEM-7 THRU-15			JAEGGI 7-25/66		
	4	1.00, 1.10							IN MOD BLK: REMOVED LEM-7 THRU LEM-15 EFF, FOR-11, -13 & -17. REMOVED LTA-8 EFF, FOR -11, -13, -15 & -17. REMOVED LTT430-20620, 1 & SUBQ (NEXT ASSY LDW280-28026) EFF & LTT430-20630, 1 & SUBQ (NEXT ASSY LDW280-28026) EFF, FOR -11, -13, -15 & -17. REVISED NEXT ASSY OF LTT430-20620 & LTT430-20630, FROM LDW280-28340 TO LDW280-51340, FOR -11, -13 & -15. REVISED NEXT ASSY OF LTT430-20620 & LTT430-20630 FROM LDW280-28340 TO LDW280-51026, FOR -17.	NOTED EJR Ⓐ		✓	M. PACHOLIK 8-18-66 RM	EB	

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY	PROJ. ENG	REL GROUP			
A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11096	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11096-17	E	FILLER	AL ALY SH	QQ-A-250/12	7075-T6	032×1 3/4×2 7/8	NONE	88	
								↕ -15	↕	ANGLE	↕	↕	7075	.032×1 3/4×15 1/4	T6	88	
								↕ -13	↕	ANGLE	↕	↕	7075	.032×1 3/4×15 1/4	T6	88	
								LDW280-11096-11	E	TRUSS	AL ALY SH	QQ-A-250/12	7075	.032×11 1/2×15	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T6	AL HT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

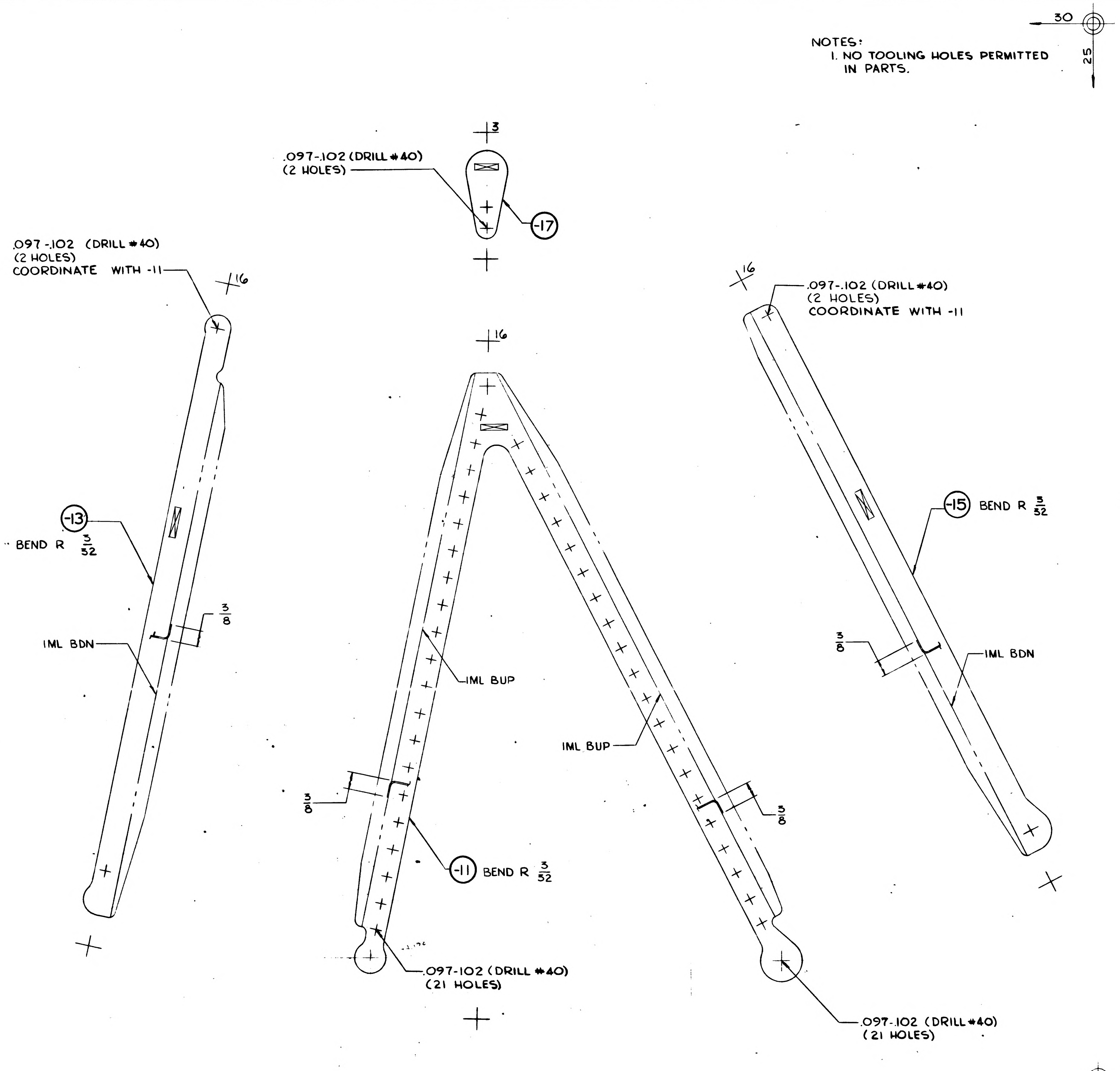
SIZE B
CODE IDENT NO. 26512
LDW280-11096
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.



30
25
.097-.102 (DRILL #40)
(2 HOLES)
-17
.097-.102 (DRILL #40)
(2 HOLES)
COORDINATE WITH -11
16
16
16
3
.097-.102 (DRILL #40)
(2 HOLES)
COORDINATE WITH -11
-13
BEND R $\frac{3}{32}$
$\frac{3}{8}$
IML BDN
IML BUP
IML BUP
$\frac{3}{8}$
$\frac{3}{8}$
-11
BEND R $\frac{3}{32}$
.097-.102 (DRILL #40)
(21 HOLES)
.097-.102 (DRILL #40)
(21 HOLES)
-15
BEND R $\frac{3}{32}$
$\frac{3}{8}$
IML BDN

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ [redacted].	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LEM	F	26512	LDW280-11096
	SCALE FULL		SHEET 3

FOR PHOTO REPRODUCTION

K3

LDW280-11096

01 NAS 9-1100

C

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11096
EO NO. B1
CONTROL INFO NO. LDW280A 6430

IN MOD. BLOCK FOR -11, -13 & -15
N/A LDW280-51340 (LM-1 & LM-2) S/B LDW280-28340
(LM-1 & LM-2), QUANTITIES SAME.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

REASON FOR EO: TO CORRECT N/A FOR NOTED EFF.

DESCRIPTION OF EO: ON -11, -13, -15
N/A WAS LDW 280-51340 FOR LM-1, LM-2

GAEC EO RELEASE: C
JK 4/24/67

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-1 (31) & LM-2 (32)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK Not Req'd SCRAP

	APPROVED BY								
DATE	4/18/67			4/17/67	4-18		4/24/67	4-24-67
6	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C
DRAWING TITLE: TRUSS-A/S, RCS FILL & DRAIN VALVE SPT.
DRAWING NO. LDW280-11096
EO NO. B1

ISSUED BY F. BADE X7033 4/14/67 SECTION VEHICLE DES. INT GROUP NO. 335 PL 25

01 NAS 9-1100

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 834
CONTROL INFO NO. LDW280B-0903

FOR THE FOLLOWING DWGS; FOR DASH No. NOTED *
ADD EFF: LFM-50 & PA-1(47) & NEXT ASSY.

LFM

(* USE APPLICABLE DASH NO. IN DESCRIPTION OF E.O.)

DWG. No.	DASH No.	No. REQD.	CHG. NO.	NEXT ASSY.
LDW280-10370	-19	2	D5	LDW280-54026
-10407	-17-19	2 EA.	D3	
-10426	-11	4	C2	
-10522	-11 -15,-16	2 4 EA.	B5	
-10546	-21-23-15,-19	2 EA.	C1	
-10547	-11-15	10	B4	
	-13-17	2EA.		
-10548	-13	4	C3	
-10549	-11,-17-18 -19	2 EA. 8	D3	
-10555	-11-17	4	B4	
	-13-15	2EA.		
-10556	-15	4	C3	
-10577	-11-13	2 EA	B3	
-10582	-11-13	2EA.	B4	
-10751	-21-23-27	2EA.	D2	
-10755	-13-23-19-21-25	2EA.	C1	
-10846	-19,-21,-13	1 EA	C3	LDW280-54026
	-23,-15,-16	2 EA		
	-17	2	B4	LDW280-54026
-11095	-11,-13,-15	2 EA		LDW280-23341
-11103	-15	2	A3	LDW280-54026
-11531	-11	2	B3	LDW280-54026
-11532	-11-15	2EA.	A5	LDW280-54026
-11096	-15-11-13	2	B2	LDW280-23340
-11103	-11-13	2 EA.	A3	LDW280-23340
-11015	-1-13	4 EA.	B4	LDW280-23278
	-15-17	8EA.		
-10978	-1-2	1EA.	B3	LDW280-23278
-11073	-13-15	2EA.	A3	LDW280H10536
LDW280-10711	-11-13-15-17	2EA.	B2	LDW280H10536
LDW280H10752	-11-13	2EA.	A2	LDW280H10536
LDW280-14235	-11	8 8	A4	LTM280-26963
	-15-19	2EA.		LTM280-26969
	-17	1		
-14255	-11-12	1EA.	B1	LTM280-26963
-10790	-11-12 -15-17-18	1EA.	B6	
	-19-21-22	1EA.		
-10789	-25,-26,-27-28-29	1EA.	A6	
	-31-32	1EA.		
-11907	-11-13-15-17-21-23	1EA.	B2	
LDW280-11882	-13-15-17-19-21	1EA.	B1	LTM280-26963
LDW280H10536	-1-3	2EA.	C4	LDW280-54026
LDW280-23328	-1	2	B5	LDW280-54026
LDW280-23278	-1-2	1 EA	C6	LDW280-23328
LDW280-23341	-1	2	A4	LDW280-23328
LDW280-23340	-1	2	A2	LDW280-23328

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD #2019 CCA 667

REASON FOR EO: UPDATE PA-1(47) TO LM-3 (33) CONFIG.

DESCRIPTION OF EO: FOR * ADDED PA-1(47) EFF.

GAEC EO RELEASE

MODEL	EFFECTIVITY		
	~~PROCURING ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM #50	PA 1(47)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
✓		NOT-REQ		DATE	1/1/68			1-8-68	1-1		1/10/68	1-1-68
REVISE DWG	RECORD EO	REWORK	SCRAP	—	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C | DRAWING TITLE: NOTED ABOVE | DRAWING NO.: LEO 280 | EO NO. 834

1-9
ISSUED BY W. FAILK SECTION VEH. DES. INT. GROUP NO. 335 PL 25

LDW280-11097

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23342-1	LEM-3(33)	1
LEM	LDW280-23342-1	LTA-3 (13)	1
PART NO. LDW280-11097-11,13,15,17 & 19		GAEC SCH NO. 31-4	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED	—	GRUMMAN REL INFO A	
LAST DASH NO. USED	-19	PRIM NO. 215	LE(001) MP-88-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	—	RELIABILITY	
LAYOUT BY	MANOS 4/14/66		
CHECKED BY			
GRP LEADER	J. PUSATERI 4/14/66		
VEH DES INT	W. BISCHOFF 4/14/66		
STRUCTURES	F.B. B.W. 4/14/66	PROJ ENGR	J. ALBER 4/16/66
STRUCTURES	HILDERMAN 4/14/66	REL GROUP	C. BOTTI 4/18/66
WEIGHTS	W. MANDRAS 4/16/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DOUBLER
ASCENT CABIN - FR FACE - EQUIPMENT LINES PENETRATIONS

SIZE B
CODE IDENT NO. 26512
LDW280-11097
A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11097 "NO CHANGE" 4-18-66

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10 2.00, 3.00							RETRACED "NO CHANGE" LAST REV "NO CHANGE" LOFTED DWG WAS DIMENSIONED DWG SHEET 1.00 OF 4 WAS SHEET 1 OF 1 ADDED SHEET 1.00, 1.10, 2.00, 3.00 EG	NOTED	NOT REQD		C. BAIS 8/1/66	RMC	8-22-66

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY	PROJ ENGR	REL GROUP			
	A	~	J Pusateri 8-4-66									

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11097	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11097-19	E	DOUBLER	AL ALLOY SH	QQ-A-250/12	7075-T6	.040 × 3 7/8 × 5 1/8	NONE	88	3B
								-17	↕	↕	↕	↕	↕	.040 × 4 7/8 × 6 7/8	↕	↕	3E
								-15	↕	↕	↕	↕	↕	.040 × 4 1/4 × 6 3/8	↕	↕	5E
								-13	↕	↕	↕	↕	↕	.040 × 4 7/8 × 6 1/4	↕	↕	7E
								LDW280-11097-11	E	DOUBLER	AL ALLOY SH	QQ-A-250/12	7075-T6	.100 × 8 3/8 × 12 1/4	NONE	88	6B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP 14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11097	A
SCALE NONE		SHEET 2.00	

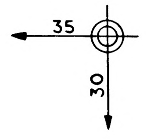
ENG 77.2 7-65

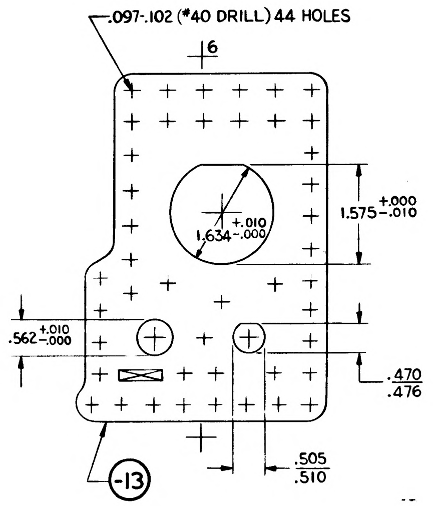
01

NAS 9-1100

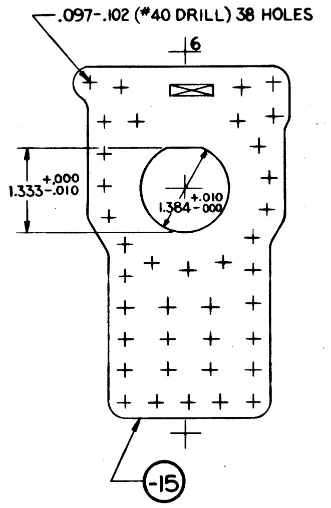
NOTE :

1. NO TOOLING HOLES PERMITTED IN PARTS

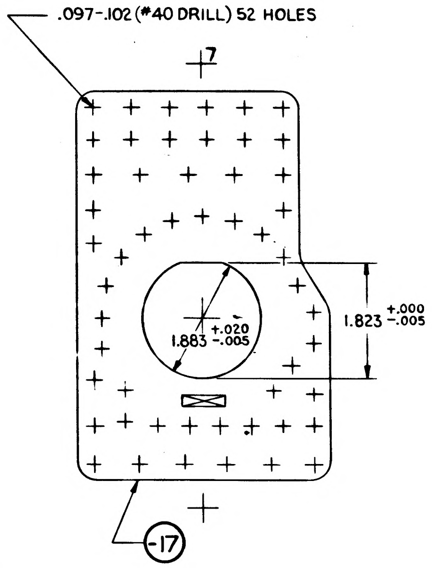




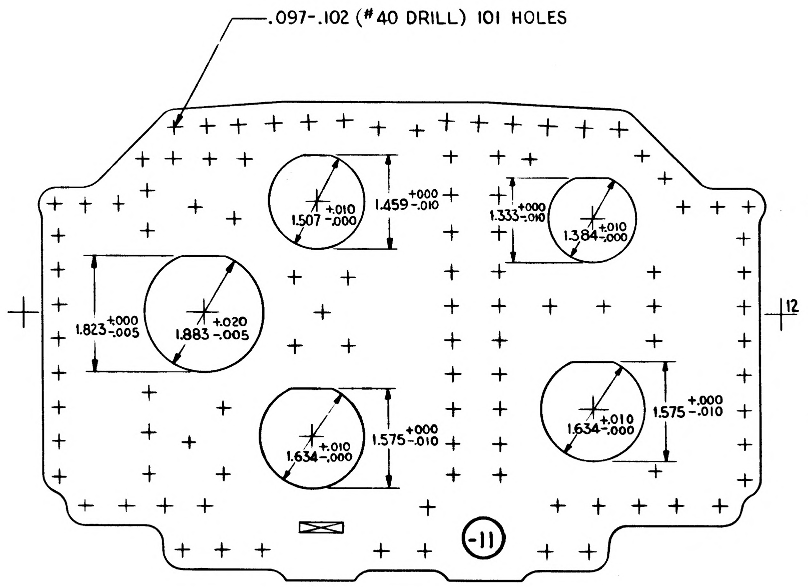
.097-.102 (#40 DRILL) 44 HOLES
6
1.575 +.000 -.010
1.634 +.010 -.000
.562 +.010 -.000
.470
.476
.505
.510
-13



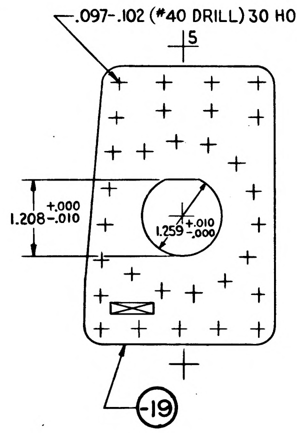
.097-.102 (#40 DRILL) 38 HOLES
6
1.333 +.000 -.010
1.384 +.010 -.000
-15



.097-.102 (#40 DRILL) 52 HOLES
7
1.823 +.000 -.005
1.883 +.020 -.005
-17



.097-.102 (#40 DRILL) 101 HOLES
1.507 +.010 -.000
1.459 +.000 -.010
1.333 +.000 -.010
1.384 +.010 -.000
1.823 +.000 -.005
1.883 +.020 -.005
12
1.634 +.010 -.000
1.575 +.000 -.010
1.634 +.010 -.000
1.575 +.000 -.010
-11



.097-.102 (#40 DRILL) 30 HOLES
5
1.208 +.000 -.010
1.259 +.010 -.000
-19

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD 10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN. NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-11097 A

01

NAS 9 - 1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

LEM	SIZE E	CODE IDENT NO. 26512	LDW280-11097	R A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO1 REPRODUCTION K2

LDW280-11098 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LSW905-10C01	TEST	2EA
	LDW280-28040	LEM-3(33)	2EA
		LEM-2(32)	2EA
		LEM-1(31)	2EA
	LDW280-28040	LTA-8 (18)	2EA
LEM	LDW280-23040	LTA-3(13)	2EA

PART NO. LDW280-11098-11, -13, -15, -17, -19, -21

GAEC SCH NO. 31-1

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A

LAST SECT LTR USED

LAST DASH NO. USED -21

GRUMMAN REL INFO A

PRIM NO. 215 | 4E(001) MP12 A | 6.6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
± 1/32 ±.010 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE
A

CONTRACT NO. NAS 9-1100
LINE ITEM NO 1
DOCUMENTATION TYPE II
3

DRAWN BY	O'CONNELL 5-16-66	RELIABILITY	
LAYOUT BY	KRAMEISEN 6-3-66		
CHECKED BY	F 5-20-66		
GROUP LDR	J. Pusateri 6/6/66		
VEH.DES.INT.	W.R. BISCHOFF		
STRUCTURES	6/6	PROJ ENGR	Plunkett 13 Jun 66
STRUCTURES	Hilderman 6/7	REL GROUP	6-16
WEIGHTS	W. D. Mandras 6/10		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SPACER
ASCENT STAGE - CABIN WINDOW - INNER

SIZE B | CODE IDENT NO. 26512 | LDW280-11098 | A

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00, 1.10 2.00, 3.00						EO A1	INITIAL DRAWING RELEASE PARTS MADE PER EO	NOTED	NOT	REQ'D	OCONNELL 5-7-66		
	2	1.00 & 1.10							REF. EO A1 N/A FOR LDW280-11098-11,-13,-15,-17,-19 & -21 LDW280-23040 SHOULD BE LDW280-28040 & LSW905-10001. EFFECTIVITY QUAL. TEST SHOULD BE TEST. TOLERANCE-DECIMALS ±.015 SHOULD BE ±.010.	LTA-8 LEM-1,-2,-3 TEST			FRANKI 6-1-66		Plunkett 13 Jun 66

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-66

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11098	A
SCALE NONE			SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11098-21	E	SPACER	AL ALY SH	QQ-A-283	7075-T6	.020 × 2½ × 6	NONE	88	
		-19	E	↕	↕	↕	↕	.020 × 3/4 × 14½	↕	↕	
		-17	E	↕	↕	↕	↕	.020 × 2½ × 6	↕	↕	
		-15	E	↕	↕	↕	↕	.020 × 3/4 × 15¼	↕	↕	
		-13	E	↕	↕	↕	↕	.020 × 2½ × 6	↕	↕	
		LDW280-11098-11	E	SPACER	AL ALY SH	QQ-A-283	7075-T6	.020 × 3/4 × 17 7/8	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ALODINE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

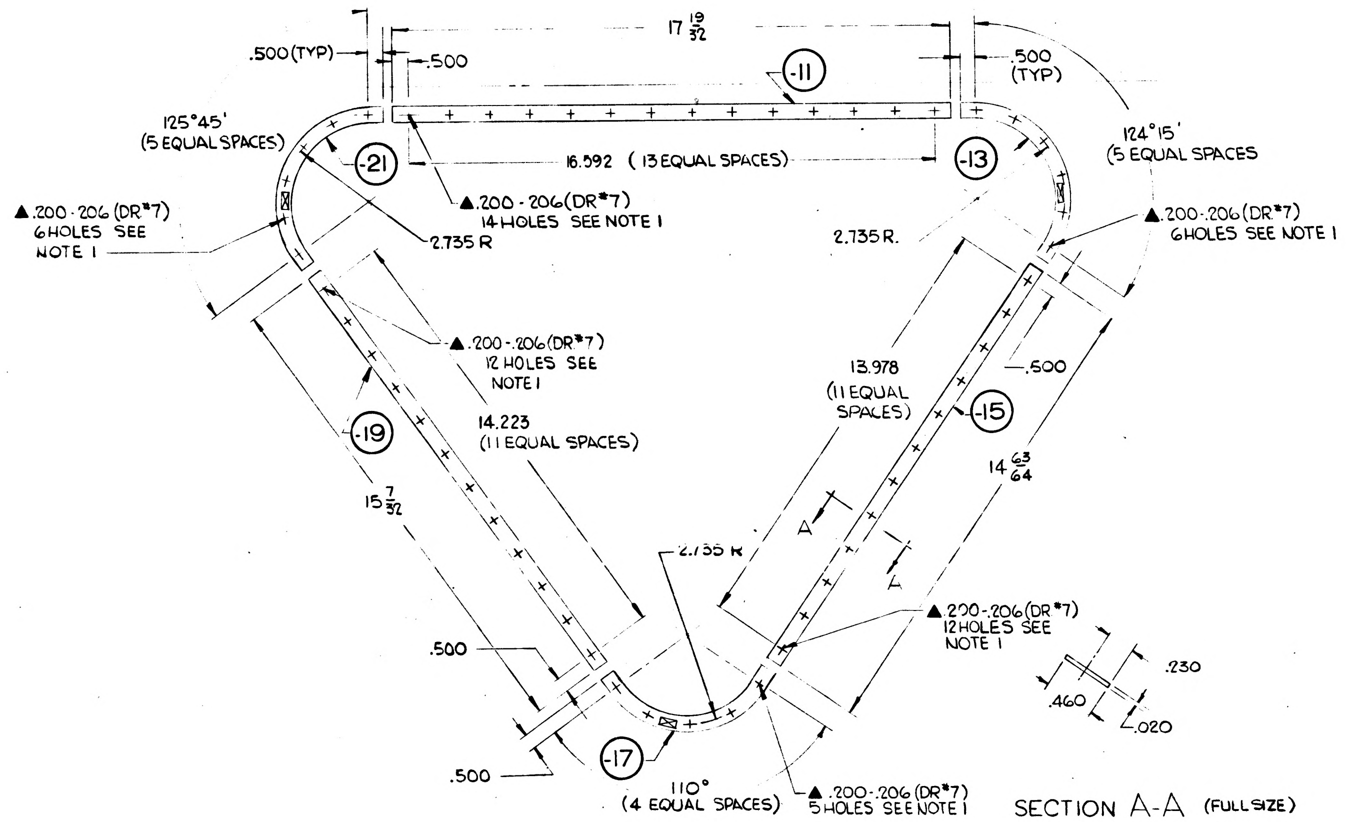
SIZE	CODE IDENT NO.		
B	26512	LDW280-11098	A
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES
1 SEE LDW280M10367 FOR CORRESPONDING HOLE PATTERN FOR HOLES MARKED ▲.
2 NO TOOLING HOLES PERMITTED IN PARTS.


17 19/32
.500 (TYP)
.500
-11
.500 (TYP)
125°45'
(5 EQUAL SPACES)
-21
16.592 (13 EQUAL SPACES)
-13
124°15'
(5 EQUAL SPACES
▲.200-.206 (DR#7)
6 HOLES SEE NOTE 1
▲.200-.206 (DR#7)
14 HOLES SEE NOTE 1
2.735 R
2.735 R.
▲.200-.206 (DR#7)
6 HOLES SEE NOTE 1
▲.200-.206 (DR#7)
12 HOLES SEE NOTE 1
13.978
(11 EQUAL SPACES)
.500
-15
-19
14.223
(11 EQUAL SPACES)
14 63/64
15 7/32
A
A
2.735 R
▲.200-.206 (DR#7)
12 HOLES SEE NOTE 1
.500
.500
-17
110°
(4 EQUAL SPACES)
▲.200-.206 (DR#7)
5 HOLES SEE NOTE 1

.230
.460
.020

SECTION A-A (FULL SIZE)
(TYP FOR -11 THRU -21)

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-11098	A
SCALE ½			SHEET 3	

0 1 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11100 EO NO. B1
CONTROL INFO NO. LDW 280 B-0873

ON-11:

ADD 2 REQ'D ON LDW 280-51321 FOR LM-1 (31)

LFM

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD-2491

REASON FOR EO: TO PROVIDE METAL WINDOWS FOR CABIN

DESCRIPTION OF EO: ON-11 ADDED LM-1 REQUIREMENTS.

GAEC EO RELEASE: JK 12/26/67 ⑤

MODEL	~~PROCURING ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM92	LM-1(31)	

DRAWING CHANGE REQ'D		DISPOSITION OF PARTS		APPROVED BY								
✓ REVISE DWG	RECORD EO	NOT REWORK	REQ SCRAP	DATE —	12/20/67 VD1	SUPPORT	RELIAB. GROUP	F.NR 12-20-67 GROUP LEADER	SW 12-20 STRESS GROUP	RP FOR HKG ~~LIAISON~~ ENGRG KSC	12/20/67 PROJ ENGRG	12-21-67 GOVT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	PANEL ASCENT STAGE - CABIN - WINDOW TEST	LDW280-11100	B1

ISSUED BY VALENTINE 12/20/67 x7033 SECTION VEH. DES. INT GROUP NO. 335 PL 25

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11100
EO NO. B2
CONTROL INFO NO. LDW280B1900

IN MOD. BLOCK FOR -11
EFF. LTA-3(13), N/A LDW280-23321 QUANTITY REQ'D { NOW 3 REQD/VEH
WAS 2 REQ'D/VEH.

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD 2504 PKG #3 (5)

REASON FOR EO: ADDITIONAL WINDOW PANEL REQUIRED FOR CABIN PRESS. TEST.

DESCRIPTION OF EO: ON -11 3 REQD/VEH WAS 2 REQD/VEH FOR N/A LDW280-23321, LTA-3 EFF.

GAEC EO RELEASE: VC 1/30/68

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-3(13)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO ☐

DISPOSITION OF PARTS: REWORK NOT REQD SCRAP

APPROVED BY				F.N.R.			
DATE	1/30/68			1-30-68		1/30/68	1-30
—	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG ~~GOVT~~

PRIORITY: C

DRAWING TITLE: PANEL- A/S, CABIN WINDOW-TEST

DRAWING NO. LDW280-11100

EO NO. B2

ISSUED BY F. BADE X7033 SECTION VEH. DES. INT GROUP NO. 335 PL 25

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW280-1100	EO NO. B3
CONTROL INFO NO. LM-5-17951	

IN GENERAL NOTES REVISE NOTE #2 AS SHOWN

2. STOCK SELECTED FOR -11 TO HAVE A $^{63}\surd$ FINISH BOTH SIDES. SIZE SHEET STOCK FROM .190 ±.010 TO .192/.188 BY CHEM MILLING OR MACHINING.

WAS

2. STOCK SELECTED FOR -11 TO BE FLAT WITHIN ±.010 AND HAVE A $^{63}\surd$ FINISH — — — — — —

RELEASED BY LIAISON

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

(5)

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
FLATNESS TOL NOT REQD	IN GENERAL NOTES REVISED NOTE #2 REMOVED "TO BE FLAT WITHIN ±.010"	JK

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	NOT REQ'D.		

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
✓		NOT REQD		DATE	2/1/68			—	2-1-68	2-1-68	2/1/68	2/7/68
REVISE DWG	RECORD EO	REWORK	SCRAP	2-1-68	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	P... ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
E	PANEL ASCENT STAGE-CABIN WINDOW	LDW 280-11100	B3

ISSUED BY LIAISON V.MAGGIPINTO/86755 SECTION VDI GROUP NO. 280 PL 25

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11100
EO NO. B4
CONTROL INFO NO. LDW280B2200

THIS E.O. REVISES E.O. B2

FOR -11: ADD EFF: TEST(75) 1 REQD.
N/A. NONE

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD 2504 PKG #3+ (5)

REASON FOR EO: ADDITIONAL WINDOW PANEL REQ'D FOR CABIN PRESS. TEST

DESCRIPTION OF EO: REF. E.O. B2
ON -11: ADDED EFF. TEST(75) 1 REQD, N/A - NONE

GAEC EO RELEASE: JK 8/15/68

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		TEST(75)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK NOT REQD SCRAP REQD

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY				FLR				Bowman
DATE	2/15/68			2-15-68			2/15/68	8-7-68

PRIORITY C
DRAWING TITLE: PANEL- A/S CABIN WINDOW - TEST
DRAWING NO. LDW280-11100
EO NO. B4

2-19-68
ISSUED BY D.R. BEITLER X1153 SECTION VDI GROUP NO. 335 PL 25

01 NAS 9-1100

LDW280-11101 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28336	LM-15(45	1 EA
		LM-14(44)	1 EA
		LM-13(43)	1 EA
		LM-12(42)	1 EA
		LM-11(41)	1 EA
		LM-10(40)	1 EA
		LM-9(39)	1 EA
		LM-8(38)	1 EA
		LM-7(37)	1 EA
		LM-6(36)	1 EA
		LM-5(35)	1 EA
		LM-4(34)	1 EA
LM	LDW280-28336	LM-3(33)	1 EA
PART NO. LDW280-11101-21, -23, -25, -27, -29, & -30		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28336	LM-2(32)	1 EA
LM	LDW280-28336	LM-1(31)	1 EA
LM	LDW280-28336	LTA-8(18)	1 EA
PART NO. LDW280-11101-11, -13, -15-17, -19 -20,		GAEC SCH NO. 31	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A			
LAST DASH NO. USED	-30	PRIM NO. 215			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	BERLINQUETTE 4-11-66		
LAYOUT BY			
CHECKED BY			
GR LEADER	W. TROUT 4/11/66		
VDI	W BISCHOFF		
STRUCTURE	R HILDERMAN 4/12	PROJ ENGR	J. ALBER 4/14
STRUCTURE	F. BUNCE 4/12	REL GROUP	A CARAMANICA 4/14
WEIGHTS	ROBESCH 4/14		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHANNEL
ASCENT STAGE - MID-SECTION
INTERSTAGE TRUSS - EQUIP LINES

SIZE B | CODE IDENT NO. 26512 | LDW280-11101 | A
SCALE NONE | SHEET 1.00 OF 4.00

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW 280-11101 N.C. DATED 4-11-66

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	[redacted] APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE - LAST REV NO CHANGE ADDED SH. 1.10, 2.00 & 3.00 LOFTED DWG WAS DIM. F. BUFFA 11-7-66				F. BUFFA 11-7-66 EG	RWS	
A	1	1.00 1.10 2.00						EO A1	ON-19 & -20, 2 11/16 WAS 1 11/16. ON-17, 5/16 R WAS 5/8 R ON-11 3/32 BEND R WAS 1/4 BEND R.	NOTED	NOT	REQD			
	2	3.00						EO A2	CREATED -21, -23, -25, -27 & -30 EFFECT. LM-3 THRU LEM-15	LM-3 THRU-15					
B	1	1.00, 1.10 200, 3.00	5D					EO B1	IN FL'D & B/M ADDED -31, REMOVED -25.	LM-3 THRU-15		-25	P. LENZ 9-3-68		
	2							EO B2	CANCELLED BY EO B3.	LTA-8	✓				
	3							EO B3	CANCELLED EO B2	LM-1 LM-2	NOT	REQ'D			
	4	1.10, 3.00	5G				✓	EO B4	ON-21, ADDED .039-.044 (#60 DRILL)	LM-3 THRU-15	✓				
	5	1.00, 1.10					✓	LEO 280-637 LCD 1354	ADDED TM-2A/R (60) EFF, N/A LTM 280-26929. ONE EACH REQ'D FOR -21, -23, -27, -29, -30 & -31	TM-2A/R	NOT	REQ'D	E.C.B.		

CHG APPROVED	LTR	GROUP LDR	VDI	STRUCTURE	STRUCTURE	WEIGHTS
	B					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11101	B

SCALE NONE SHEET 1.10

ENG 77.16 3-66

0 1

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11101 -30	E	CHANNEL	AL ALY SH.	QQ-A-250/4	2024-T3	.032 x 4 x 4	NONE	88	3B
		-29						.032 x 4 x 4			3B
		-27		CHANNEL				.032 x 5 x 6			4C
		-31		ANGLE				.032 x 3 x 3			5D
		-23		CHANNEL				.032 x 3 x 4			5F
		-21						.032 x 6 x 9			5G
		-20						.032 x 4 x 4			6B
		-19						.032 x 4 x 4			6B
		-17		CHANNEL				.032 x 5 x 6			7C
		-15		ANGLE				.032 x 3 x 3			8D
		-13		CHANNEL				.032 x 3 x 4			8E
		LDW280-11101 - 11	E	CHANNEL	AL ALY SH	QQ-A-250/4	2024-T3	.032 x 6 x 9	NONE	88	7G

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11101	B

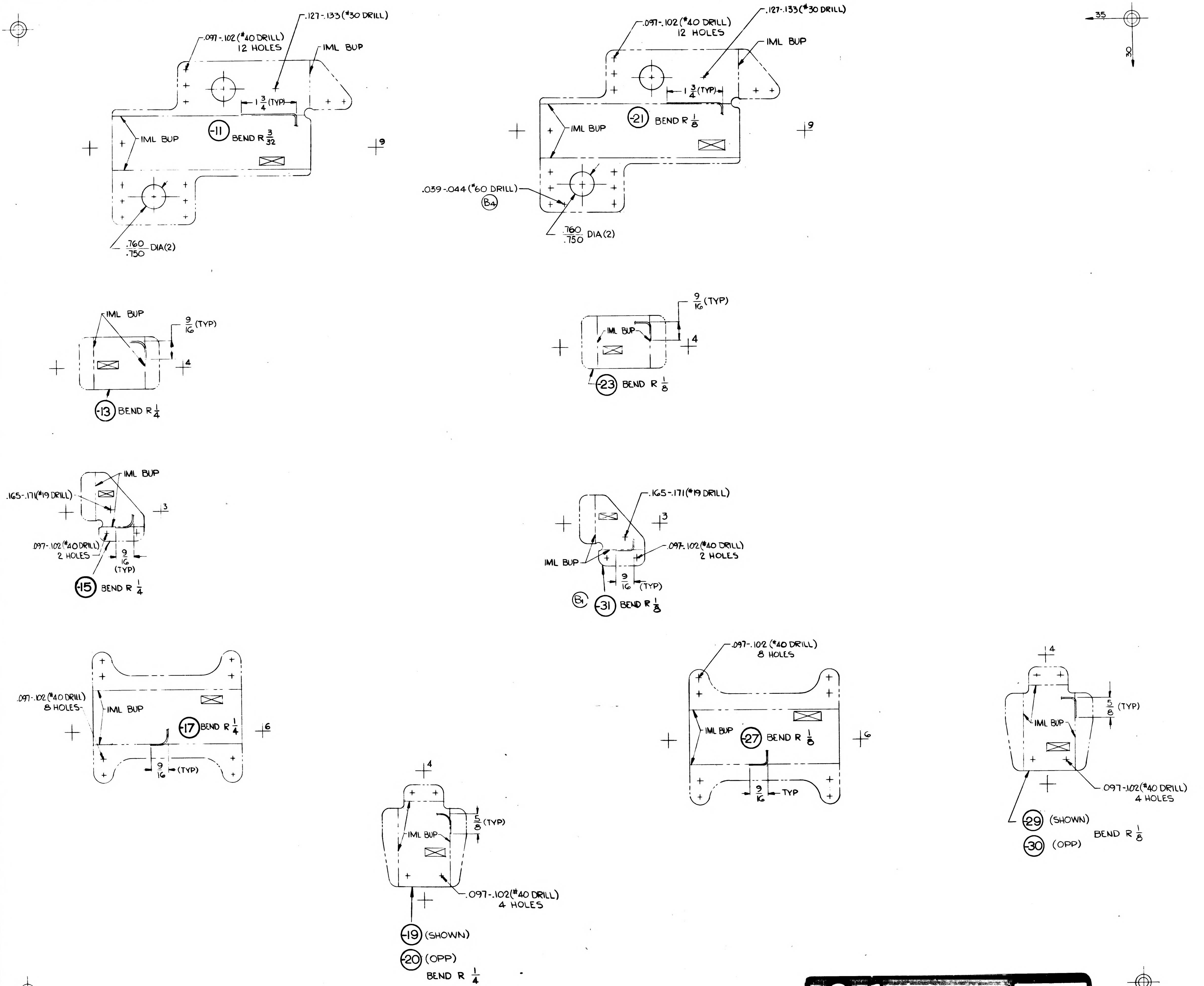
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


.097-.102 (#40 DRILL)
12 HOLES
.127-.133 (#30 DRILL)
IML BUP
$1\frac{3}{4}$ (TYP)
IML BUP
-11 BEND R $\frac{3}{32}$
.760/.750 DIA (2)
9
.097-.102 (#40 DRILL)
12 HOLES
.127-.133 (#30 DRILL)
IML BUP
$1\frac{3}{4}$ (TYP)
IML BUP
-21 BEND R $\frac{1}{8}$
9
.039-.044 (#60 DRILL)
B4
.760/.750 DIA (2)
IML BUP
$\frac{9}{16}$ (TYP)
4
-13 BEND R $\frac{1}{4}$
$\frac{9}{16}$ (TYP)
IML BUP
4
-23 BEND R $\frac{1}{8}$
IML BUP
.165-.171 (#19 DRILL)
3
.097-.102 (#40 DRILL)
2 HOLES
$\frac{9}{16}$ (TYP)
-15 BEND R $\frac{1}{4}$
.165-.171 (#19 DRILL)
3
.097-.102 (#40 DRILL)
2 HOLES
IML BUP
$\frac{9}{16}$ (TYP)
B1
-31 BEND R $\frac{1}{8}$
.097-.102 (#40 DRILL)
8 HOLES
IML BUP
-17 BEND R $\frac{1}{4}$
6
$\frac{9}{16}$ (TYP)
.097-.102 (#40 DRILL)
8 HOLES
IML BUP
-27 BEND R $\frac{1}{8}$
6
$\frac{9}{16}$ TYP
4
$\frac{5}{8}$ (TYP)
IML BUP
.097-.102 (#40 DRILL)
4 HOLES
-29 (SHOWN)
-30 (OPP)
BEND R $\frac{1}{8}$
4
$\frac{5}{8}$ (TYP)
IML BUP
.097-.102 (#40 DRILL)
4 HOLES
-19 (SHOWN)
-20 (OPP)
BEND R $\frac{1}{4}$
35
8

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK
LM
MODEL OR END ITEM
SIZE E
CODE IDENT NO. 26512
LDW280-11101
R B
SCALE FULL
SHEET 3.00
FOR PHOTO REPRODUCTION
K2

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28336	LEM-15(45)	2
		LEM-14(44)	2
		LEM-13(43)	2
		LEM-12(42)	2
		LEM-11(41)	2
		LEM-10(40)	2
		LEM-9(39)	2
		LEM-8(38)	2
		LEM-7(37)	2
		LEM-6(36)	2
		LEM-5(35)	2
		LEM-4(34)	2
LEM	LDW280-28336	LEM-3(33)	2
PART NO. LDW280-11102-21		GAEC SCH NO. 31-2	

LDW280-11102 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28336	LEM-15(45)	4
		LEM-14(44)	4
		LEM-13(43)	4
		LEM-12(42)	4
		LEM-11(41)	4
		LEM-10(40)	4
		LEM-9(39)	4
		LEM-8(38)	4
		LEM-7(37)	4
		LEM-6(36)	4
		LEM-5(35)	4
		LEM-4(34)	4
LEM	LDW280-28336	LEM-3(33)	4
PART NO. LDW280-11102-17 (CONTINUED)		GAEC SCH NO. 31-2	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28336	LEM-2(32)	4
LEM	LDW280-28336	LEM-1(31	4
LEM	LDW280-28336	LTA-8(18)	4
LDW280-11102-17			
LEM	LDW280-28336	LEM-2(32)	2
LEM	LDW280-28336	LEM-1(31)	2
LEM	LDW280-28336	LTA-8(18	2
LDW 280-11102-11			
LEM	LDW280-28336	LEM-15-(45)	1EA
		LEM-14(44)	1EA
		LEM13(43)	1EA
		LEM-12(42)	1EA
		LEM-11(41)	1EA
		LEM-10(40)	1EA
		LEM-9(39)	1EA
		LEM-8(38)	1EA
		LEM-7(37)	1EA
		LEM-6(36)	1EA
		LEM-5(35)	1EA
		LEM-4(34)	1EA
		LEM-3(33)	1EA
		LEM-2(32)	1EA
		LEM-1(31)	1EA
LEM	LDW280-28336	LTA-8(18	1EA
PART NO. LDW280-11102-1, 13 & 14		GAEC SCH NO. 31-2	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -21

GRUMMAN REL INFO A

PRIM NO.	LE(001)		EMF
215	MP-14	A10-11-6	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	BERLINQUETTE 4-11-66	RELIABILITY	
LAYOUT BY	J.R.P		
CHECKED BY			
GR LEADER	W. TRAUT 4-11-66		
VEH DES INT	W BISCHOFF 4-12-66		
STRUCTURES	FEB JG 4-12-66	PROJ ENGR	J ALBER/RC 4-14
STRUCTURES	HILDERMAN 4-12-66	REL GROUP	A CARAMANICA 4-16
WEIGHTS	D ROBESCH 4-14-66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET ASSY
ASCENT STAGE MID SECTION ~ RIGHT HAND
INTERSTAGE TRUSS EQUIPMENT LINES

SIZE B
CODE IDENT NO. 26512
LDW280-11102 A
SCALE NONE
SHEET 1.00 OF 4.00

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-11102 "NO CHANGE" 4-16-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACEDNO CHANGE LAST REV NO CHANGE. LOFTED DWG WAS DIM ADDED SHEETS 1.10, 2.00 & 3.00 C.J. CASTELLANO 9-22-66						
A	1	1.00, 1.10 2.00 & 3.00						EO-A1	CREATED -21 EFFECT. LEM-3 THRU-15. TO-1, -13-14 & -17 ADDED EFFECT. LEM-3 THRU-15 EG	NOTED	NOT	REQ'D	Castellano 9-22-66		

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY					
A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11102	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY						CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
					-1											
							MS20426-AD3	E	RIVET	STD PART						
					2		NAS 686 C08		PLATE NUT	STD PART						
							LDW280-11102-21		CLIP	AL ALY SH	QQ-A-250/4	2024-T3	.032 X 1 3/4 X 2	NONE	88	
							-17		CLIP	AL ALY SH	QQ-A-250/4	2024	.032 X 2 X 2 5/8	T3/T42	88	
					1		-15		CHANNEL	AL ALY SH	QQ-A-250/12	7075	.040 X 1 3/8 X 5 1/4	T6	88	
							-14		CHANNEL	AL ALY SH	QQ-A-250/12	7075	.040 X 3 1/8 X 3 7/8	T6	88	
							-13		CHANNEL	AL ALY SH	QQ-A-250/12	7075	.040 X 3 1/8 X 3 7/8	T6	88	
							LDW280-11102-11		CLIP	AL ALY SH	QQ-A-250/4	2024-T3	.032 X 1 3/4 X 1 7/8	NONE	88	
							LDW280-11102-1	E	BRACKET ASSY					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						HT	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

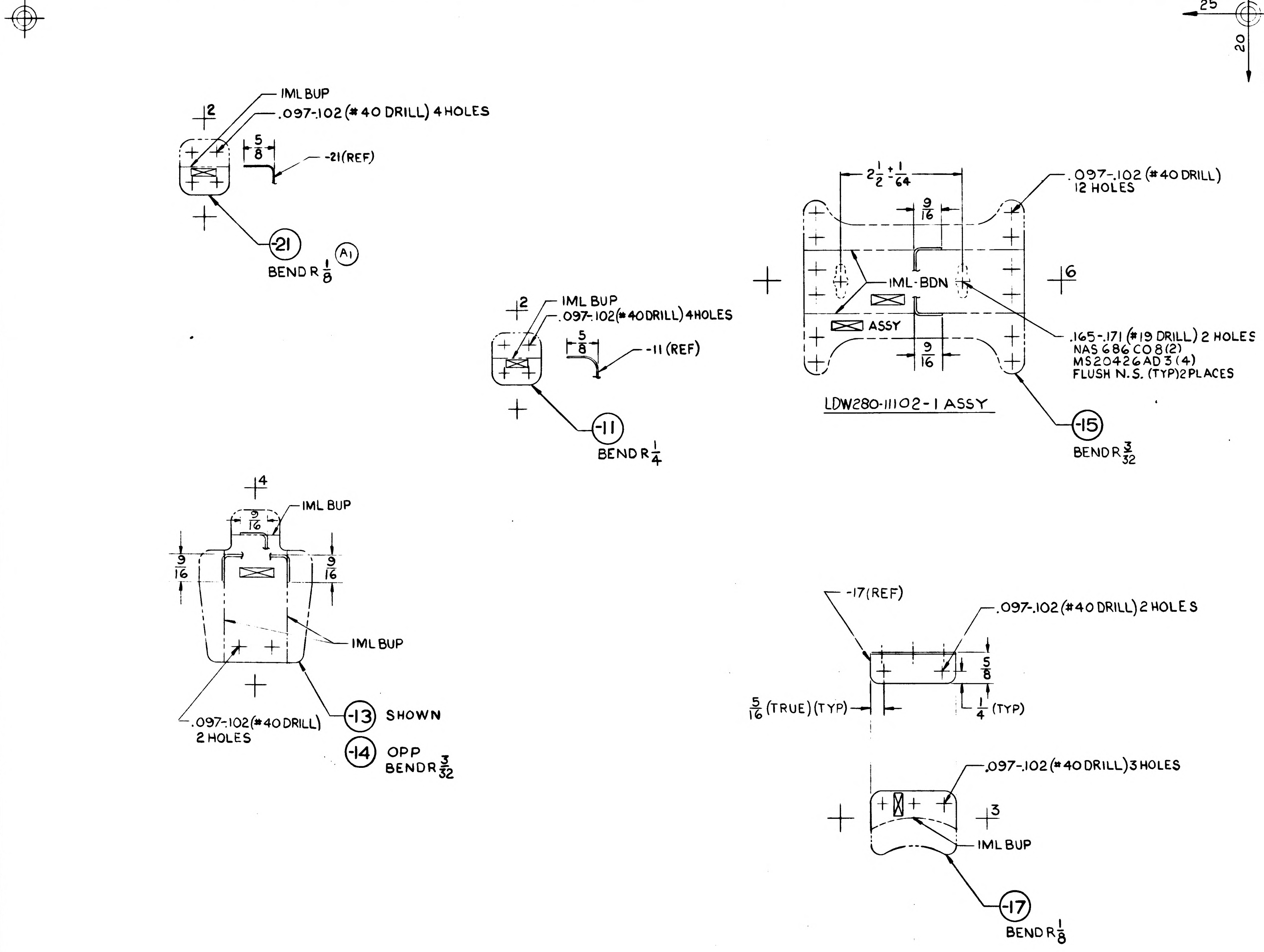
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11102	A
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



IML BUP
.097-.102 (#40 DRILL) 4 HOLES
2
5/8
-21 (REF)
-21
BEND R 1/8
A1
IML BUP
.097-.102 (#40 DRILL) 4 HOLES
2
5/8
-11 (REF)
-11
BEND R 1/4
2 1/2 + 1/64
9/16
.097-.102 (#40 DRILL) 12 HOLES
IML-BDN
ASSY
6
.165-.171 (#19 DRILL) 2 HOLES
NAS 686 C08 (2)
MS20426AD3 (4)
FLUSH N.S. (TYP) 2 PLACES
LDW280-11102-1 ASSY
-15
BEND R 3/32
4
9/16
IML BUP
9/16
9/16
IML BUP
.097-.102 (#40 DRILL) 2 HOLES
-13 SHOWN
-14 OPP
BEND R 3/32
-17 (REF)
.097-.102 (#40 DRILL) 2 HOLES
5/8
5/16 (TRUE) (TYP)
1/4 (TYP)
.097-.102 (#40 DRILL) 3 HOLES
3
IML BUP
-17
BEND R 1/8
25
20

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS
2. INSTALL FASTENERS PER LSP-14-15302

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32 & NOTED	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK
LEM
MODEL OR END ITEM
SIZE D
CODE IDENT NO. 26512
LDW280-11102
A
SCALE FULL
SHEET 3.00
FOR PHOTO REPRODUCTION
K2

01 NAS 9-1100

C

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LEO280

EO NO. 637

CONTROL INFO NO. LDW280A7635

IN THE MODULE NUMBER BLOCK OF THE FOLLOWING DRAWINGS, AND LISTED DASH NUMBERS, ADD TM-2 A/R (60) EFF & N/A LTM280-26929 WITH QUANTITIES INDICATED.

DRAWING & DASH NO.	NO. REQD	TITLE	CHANGE NO
✓ LDW280-11101-21	1	CHANNEL	B5
-23	1	CHANNEL	
-27	1	CHANNEL	
-29	1	CHANNEL	
-30	1	CHANNEL	
LDW280-11101-31	1	ANGLE	
✓ LDW280-11102-17	2	CLIP	B1
✓ LDW280-11102-21	2	CLIP	
LDW280M10824-1	1	SUPPORT	A3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐ LCD 1354

REASON FOR EO: UP DATING EFFECTIVITY

DESCRIPTION OF EO: ADDED TM-2 A/R (60) EFF, N/A LTM280-26929, QUANTITIES INDICATED, TO THE FOLLOWING: (SEE ABOVE)

GAEC EO RELEASE: C

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		TM-2 A/R(60)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK / SCRAP: NOT REQ'D

				GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY					JV			
DATE	6/26			6/26/67	6/26		6-26	6/26/67
	VDI	SUPPORT	RELIAB. GROUP					

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO.: LEO 280

EO NO.: 637

ISSUED BY F BADE X7033 6/21/67 SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11103

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23026	LEM-6(36)	2
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
LEM	LDW280-23026	LTA-3(13)	2
PART NO. LDW280-11103-15		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23340	LEM-6(36)	2 EA
		LEM-5(35)	
		LEM-4(34)	
		LEM-3(33)	
LEM	LDW280-23340	LTA-3(13)	2 EA
PART NO. LDW280-11103-11&-13		GAEC SCH NO. 32-7	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	2.00	3.00
REV			
SHEET			
REV			
SHEET			
REV			

LAST SECT LTR USED

LAST DASH NO. USED -15

GRUMMAN REL INFO

PRIM NO. 207 LE(001) MP12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ± 1/32 ±.020 ± 1/2

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS-9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY O'NEILL

LAYOUT BY BRANDT

CHECKED BY 5-8-66

GP LEADER 5/6/66

VEH DES INT

STRUCTURES 5/13

STRUCTURES Wilderman 5-14

WEIGHTS 5-20

RELIABILITY

PROJ ENGR 5-22

REL GROUP Botti 5-27-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TRUSS
ASCENT STAGE ~ MID SECTION ~ RCS
FILL & DRAIN LINE DISCONNECT

SIZE B

CODE IDENT NO. 26512

LDW280-11103

SCALE NONE

SHEET 1.00 OF 3

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11103-15	E	GUSSET	AL ALLOY SH	QQ-A-283	7075-T6	040 × 1 3/4 × 2 7/8	NONE	88	
		LDW280-11103-13	E	ANGLE	AL ALLOY SH	QQ-A-283	7075	032 × 1 3/4 × 13 7/8	T6	88	
		LDW280-11103-11	E	TRUSS	AL ALLOY SH	QQ-A-283	7075	032 × 11 5/8 × 14	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11103

SCALE NONE

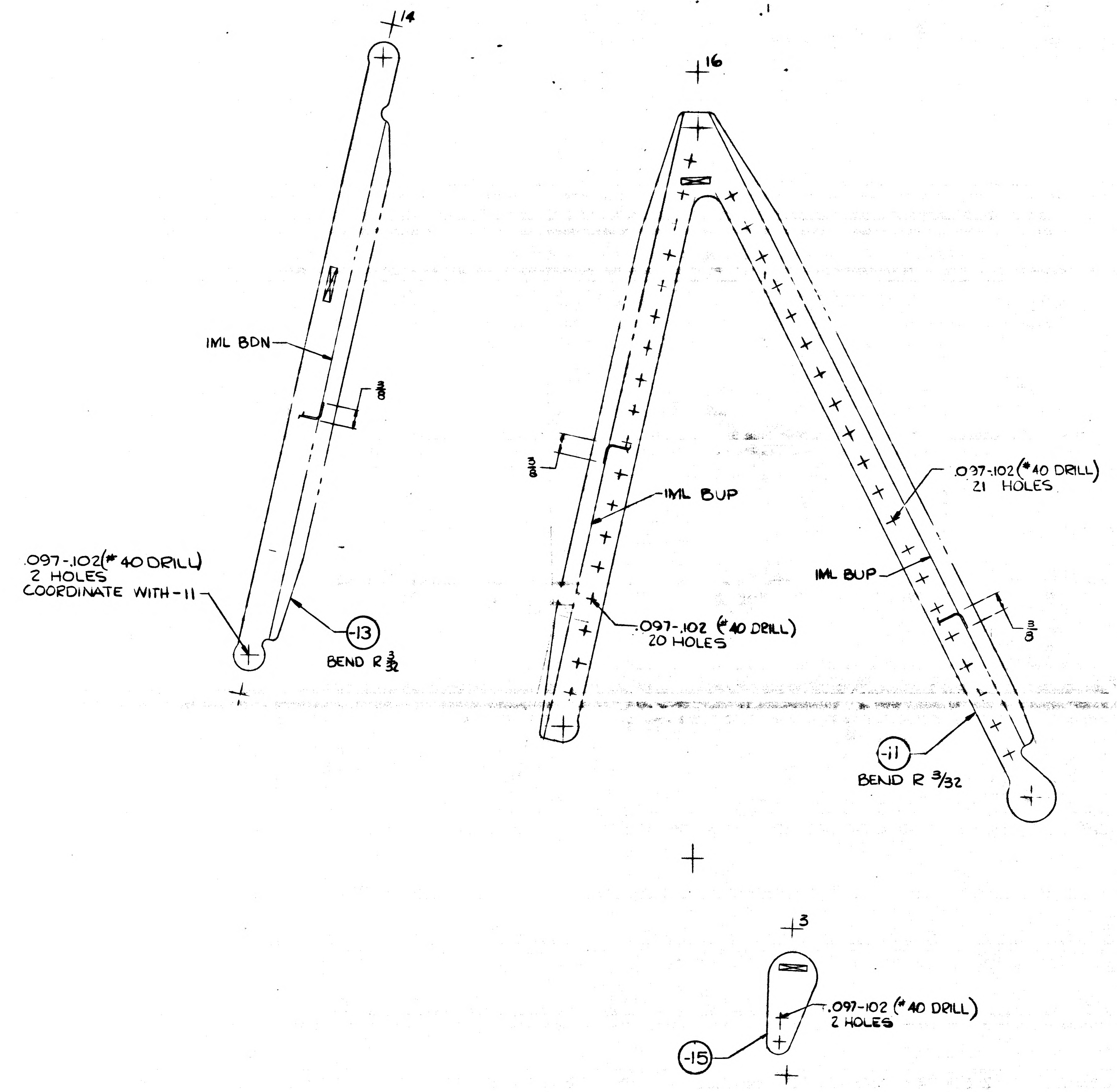
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.


-14
IML BDN
3/8
.097-.102(#40 DRILL)
2 HOLES
COORDINATE WITH -11
-13
BEND R 3/32
-16
3/8
IML BUP
.097-.102 (#40 DRILL)
20 HOLES
.097-.102(#40 DRILL)
21 HOLES
IML BUP
3/8
-11
BEND R 3/32
-3
.097-.102 (#40 DRILL)
2 HOLES
-15

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
F	26512	LDW280-11103

MODEL OR END ITEM
SCALE FULL
SHEET 3.00

FOR PHOTO REPRODUCTION

LDW280-11103

NAS 9-1100

01

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NAS 9-1100

24 *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280
EO NO. 296
CONTROL INFO NO. LDW280 A 0658

*

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9 (39), LEM-10(40), LEM-11(41), LEM-12 (42), LEM-13(43) LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10981	A1	SEE DRAWING
-11015	B1	
-11025	B1	
-11028	B4	
-11035	A2	
-11036	B1	
-11039	A1	
-11045	A1	
-11048	B1	
-11050	C1	
P11055	B2	
P11056	C2	
-11067	B1	
-11068	B1	
H11069	B1	
-11070	C1	
-11071	A1	
-11072	A1	
-11073	A2	
P11087	B1	
-11103	A1	
-11116	A1	
-11119	B1	
-11123	A2	
-11128	C1	
-11149	A1	
-11153	A1	
-11154	A2	
-11155	A1	
-11156	B1	
-11157	B2	
LDW280-11160	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE: 10.8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM 9(39)
LEM		LEM-10(40) LEM-11(41)	LEM-12 (42)
LEM		LEM-13(43) LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD: ✓ REVISE DWG / RECORD

DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

APPROVED BY								
	RP			—				OC
DATE	9/23/66			—	9.9		10-6-66	10-3-66
	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO.: LE0280

EO NO.: 296

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL. 3

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER EMF-A

DWG. NO. LEO-280
EO NO. 442
CONTROL INFO NO. LM-2-3201

FOR THE LISTED DASH NUMBERS OF THE FOLLOWING DRAWINGS EFFECTIVE LM4 (34) THRU LM-15 (45) NEXT ASSEMBLY LDW280-23026 SHOULD BE LDW280-54026

DRAWING NUMBER	DASH NUMBER	CHANGE NUMBER	TITLE
✓ LDW280-10370	-19	D2	SEE DRAWING
✓ 10407	-17; -19	D1	
✓ 10426	-11	C1	
✓ 10522	-11; -15 & -16	B2	
✓ 10546	-15; -19; -21 & -23	B6	
✓ 10547	-11; -13 & -17	B3	
✓ 10548	-13	C2	
✓ 10549	-17; -18 & -19	D2	
✓ 10555	-11; -13 & -15	B2	
✓ 10556	-15	C2	
✓ 10577	-11	B2	
✓ 10582	-11 & -13	B3	
10751	-21; -23 & -27	C6	
10846	-13; -15; -16; -19; -21 & -23	C2	
11095	-17	B1	
11103	-15	A2	
11531	-11	B2	
LDW280-11532	-11 & -15	A4	
LDW280H-10536	-1 & -3	C2	
LDW280M-10056	-3	D2	
-10553	-1	B3	
-10568	-1	C2	
-10581	-1 & -2	B2	
-10593	-1	A2	
-10657	-2	B2	
-10688	-1	B2	
LDW280M-10979	-1	A2	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF EO.

2

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: TO AGREE WITH: LDW280-54026 NEXT ASSY. REQ.S

DESCRIPTION OF EO: FOR DASH * NEXT ASSY. LDW280-54026 WAS LDW280-23026

GAEC C EO RELEASE

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-4 (34)	
		THRU	
		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK ✓ SCRAP

APPROVED BY / DATE: -6-

	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
APPROVED BY				Jaw	caw	pmc	
DATE				1/11/67	1/11/67	1-16-67	1-12-67

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LEO-280
EO NO.: 442

ISSUED BY LIAISON T.J. MARTIN X3604 1-10-67 SECTION V.D.I. GROUP NO. 335 PL 35

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 837
CONTROL INFO NO. LDW280B-0903

FOR THE FOLLOWING DWGS; FOR DASH No. NOTED *
ADD EFF: LFM-50 & PA-1(47) & NEXT ASSY.

LFM

(* USE APPLICABLE DASH NO. IN DESCRIPTION OF E.O.)

DWG. No.	DASH No.	No. REQD.	CHG. NO.	NEXT ASSY.
LDW280-10370	-19	2	D5	LDW280-54026
-10407	-17-19	2 EA.	D3	
-10426	-11	4	C2	
-10522	-11 -15,-16	2 4 EA.	B5	
-10546	-21-23-15,-19	2 EA.	C1	
-10547	-11-15	10	B4	
	-13-17	2EA.		
-10548	-13	4	C3	
-10549	-11,-17-18 -19	2 EA. 8	D3	
-10555	-11-17	4	B4	
	-13-15	2EA.		
-10556	-15	4	C3	
-10577	-11-13	2 EA	B3	
-10582	-11-13	2EA.	B4	
-10751	-21-23-27	2EA.	D2	
-10755	-13-23-19-21-25	2EA.	C1	
-10846	-19,-21,-13	1 EA	C3	LDW280-54026
	-23,-15,-16	2 EA		
	-17	2	B4	LDW280-54026
-11095	-11,-13,-15	2 EA		LDW280-23341
-11103	-15	2	A3	LDW230-54026
-11531	-11	2	B3	LDW230-54026
-11532	-11-15	2EA.	A5	LDW230-54026
-11096	-15-11-13	2	B2	LDW280-23340
-11103	-11-13	2 EA.	A3	LDW230-23340
-11015	-1-13	4 EA.	B4	LDW280-23278
	-15-17	8EA.		
-10978	-1-2	1 EA.	B3	LDW230-23278
-11073	-13-15	2EA.	A3	LDW280H10536
LDW280-10711	-11-13-15-17	2EA.	B2	LDW280H10536
LDW280H10752	-11-13	2EA.	A2	LDW280H10536
LDW280-14235	-11	8	A4	LTM280-26963
	-15-19	2EA.		LTM280-26969
	-17	1		
-14255	-11-12	1EA.	B1	LTM280-26963
-10790	-11-12 -15-17-18	1EA.	B6	
	-19-21-22	1EA.		
-10789	-25,-26,-27 28-19	1EA.	A6	
	-31-32	1EA.		
-11907	-11-13-15-17-21-23	1EA.	B2	
LDW280-11882	-13-15-17-19-21	1EA.	B1	LTM280-26963
LDW280H10536	-1-3	2EA.	C4	LDW280-54026
LDW280-23328	-1	2	B5	LDW280-54026
LDW280-23278	-1-2	1 EA	C6	LDW280-23328
LDW280-23341	-1	2	A4	LDW280-23328
LDW280-23340	-1	2	A2	LDW280-23328

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ : CD #2019 CCA 667

REASON FOR EO: UPDATE PA-1(47) TO LM-3 (33) CONFIG.

DESCRIPTION OF EO: FOR * ADDED PA-1(47) EFF.

GAEC EO RELEASE: JK

MODEL	PROCURING ACTIVITY NO. EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM #50	PA-1(47)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK NOT | SCRAP REQ

APPROVED BY — DATE 1/8/68 — VDI | SUPPORT | RELIAB. GROUP | GROUP LEADER 1-8-68 | STRESS GROUP 1-9 | LIAISON ENGRG | PROJ ENGRG 1/8/68 | ~~GOVT~~ Botte 1-4-68

PRIORITY: C

DRAWING TITLE: NOTED ABOVE

DRAWING NO.: LEO 280

EO NO. 837

1-9
ISSUED BY W. FAULK SECTION VEH. DES. INT. GROUP NO. 335 PL 25

LDW280-11105 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53332	LEM-3(33)	1 EA
PART NO. LDW280-11105-15 &-17		GAEC SCH NO. 30	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28332	LEM-2(32)	1 EA
LM	LDW280-28332	LEM-1(31)	1 EA
LM	LDW280-28332	LTA-8(18)	1 EA
PART NO. LDW280-11105-11 &-13		GAEC SCH NO. 30	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	~	GRUMMAN REL INFO A			
LAST DASH NO. USED	-17	PRIM NO.	FR(001)		
		215	MP 14A	12/11/6	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.010 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100 | LINE ITEM #1 | DOCUMENTATION TYPE II

DRAWN BY	F. CURASI 4-11	RELIABILITY	
LAYOUT BY			
CHECKED BY ENB (A)			
GR LEADER	PUSATERI 4-14		
VEH DES INT	BISCHOFF 4-14		
STRUCTURE	BUNCE 4-15	PROJ ENGR	ALBER 4-28-66
STRUCTURE	HILDERMAN 4-20	REL GROUP	CARAMANICA 5-2-66
WEIGHTS	ROBESCH 4-21		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE-CABIN-CANTED FRAME
VIBRATION AMPLIFIER

SIZE	CODE IDENT NO.		
B	26512	LDW280-11105	A
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 12-65

SUPERSEDES LDW280-11105

NO CHG 5-2-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	[redacted] APPD
									RETRACED NO CHG. LAST REV NO CHG ADDED SH 1.10 FITZGERALD 12-1-66						
A	1	1.00 & 1.10						EO A1	REMOVED LTA-1 REQUIREMENTS FOR -11 & -13	LTA-1(11)		✓	FITZ-GERALD		
	2	1.10 & 3.00						EO A2	REMOVED .025 JOG IN -17	LM-3(33)	✓		12-1-66		
	3	1.00, 1.10							ON SH 1.00, LAST DASH NO. USED -17, WAS -13. GB	NOT REQD	NOT	REQD	RMS		

	LTR	GROUP LDR	VEH. DES. INT.	STRUCTURE	STRUCTURE	WEIGHTS	RELIABILITY				
CHG APPROVED	A	RVP ES 12-6-66	RVP ES 12-6-66								

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11105	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11105-17	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.040 x 3 X 9	T6	88	
								LDW280-11105-15	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.040 x 3 X 8	T6	88	
								LDW280-11105-13	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.040 x 3 X 9	T6	88	
								LDW280-11105-11	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.040 X 3 X 8	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

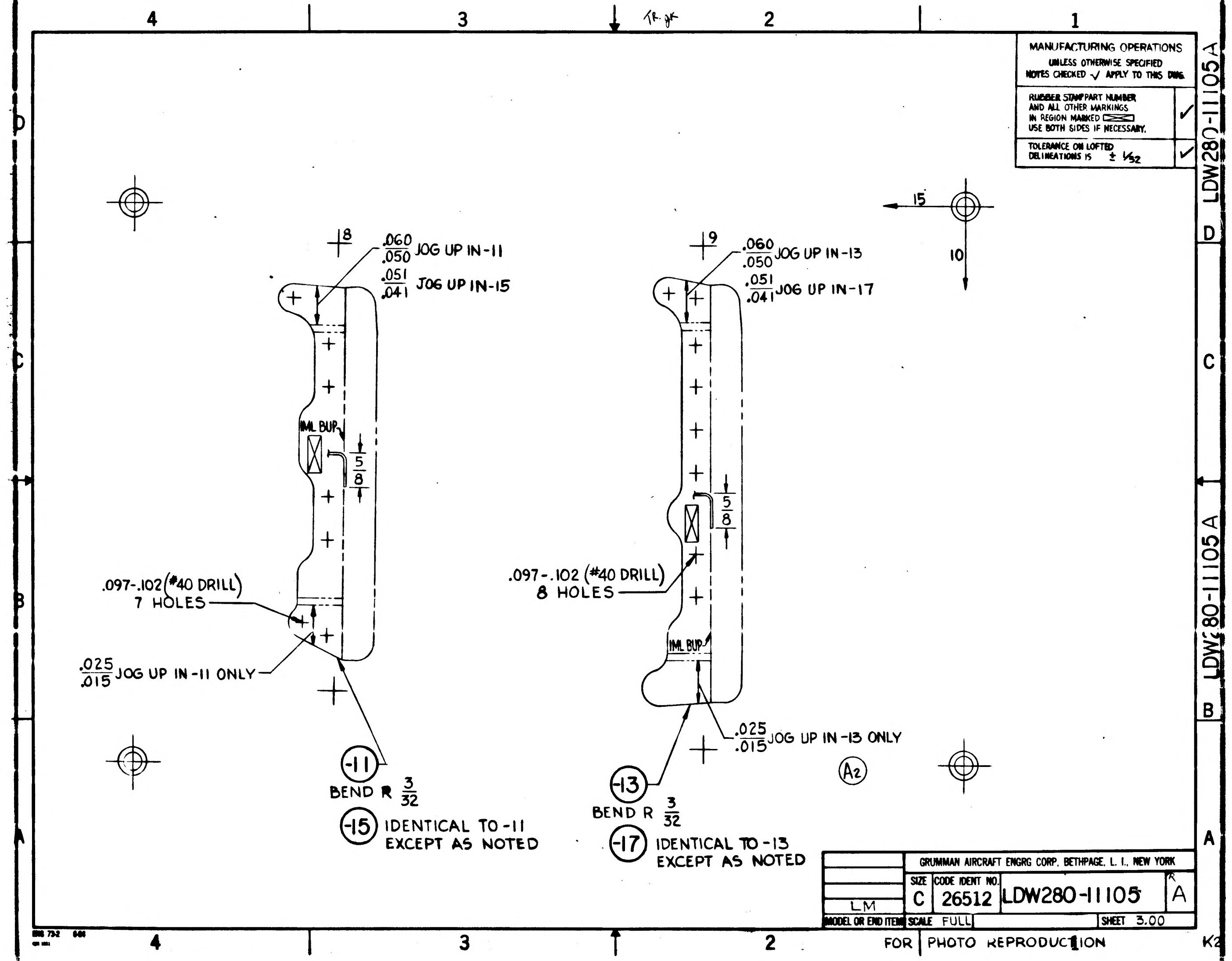
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11105	A
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


4
3
2
1
D
C
B
A
8
.060/.050 JOG UP IN-11
.051/.041 JOG UP IN-15
IML BUP
5/8
.097-.102 (#40 DRILL)
7 HOLES
.025/.015 JOG UP IN-11 ONLY
-11
BEND R 3/32
-15 IDENTICAL TO -11
EXCEPT AS NOTED
9
.060/.050 JOG UP IN-13
.051/.041 JOG UP IN-17
15
10
IML BUP
5/8
.097-.102 (#40 DRILL)
8 HOLES
.025/.015 JOG UP IN-13 ONLY
A2
-13
BEND R 3/32
-17 IDENTICAL TO -13
EXCEPT AS NOTED
LDW280-11105 A
K2

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		R
C	26512	LDW280-11105	A

MODEL OR END ITEM: LM
SCALE FULL
SHEET 3.00

FOR PHOTO REPRODUCTION

01
NAS 9-1100

LDW280-11106 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54310	LM-15(45)	1 EA
LM		LM-14(44)	1 EA
LM		LM-13(43)	1 EA
LM		LM-12(42)	1 EA
LM		LM-11(41)	1 EA
LM		LM-10(40)	1 EA
LM		LM-9(39)	1 EA
LM		LM-8(38)	1 EA
LM		LM-7(37)	1 EA
LM		LM-6(36)	1 EA
LM		LM-[illegible](35)	1 EA
LM	LDW280-54310	LM-4(34)	1 EA
LM	LDW280-53310	LM-3(33)	1 EA
LM	LDW280-28310	LTA-8(18)	1 EA
LM	LDW280-28310	LM-2(32)	1 EA
LM	LDW280-28310	LM-1(31)	1 EA

PART NO. LDW280-11106-1 & -2 GAEC SCH NO. 31

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.01	2.00	3.00
REV	A	A	A	A

LAST SECT LTR USED

LAST DASH NO. USED -12

GRUMMAN REL INFO A

PRIM NO. 215 | 1E(001) MP-14 | A-1-5-7 | EMF

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ± .010 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY B. YANOFF 12/16/66
RELIABILITY
LAYOUT BY E. HARRIGAN
CHECKED BY EG 12-20-66
GR LEADER R V Phillips 12-29-66 ES
STRUCTURES 6-1-67
STRUCTURES
VEH DES INT J. Puratari 1/3/67
WEIGHTS
PROJ ENGR RM Colbie 1-4-67
REL GROUP Pagliarea 1-4-67

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET ASSY
ASCENT ~ MID SECT ~ EQUIP LINES

SIZE B
CODE IDENT NO. 26512
LDW280-11106 A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ________

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~[illegible]~~ APPD
											REWORK	SCRAP			
A	1	1,1.10,2.00 3.00						EOA1	EOA1 INITIAL DWG RELEASE. PARTS MADE PER E.O.	LM-1, LM-2 LTA-8	NOT	REQD	B. YANOFF 12/16/66	1-4-67	1/4/67
	2	3.00 1.10						EOA2	IN FLD (ON -11) DRILL #40 (6) HOLES (WAS) (7); (ON-12) DRILL #40 (5) HOLES (WAS) (7), & REVISED TRIM		✓				
	3	1.10,1.00						EOA3	IN MOD/BLK ADD EFFECTIVITY OF LEM-3 THRU LEM-15 FOR -1, -2	LM-3 THRU LM-15	NOT	REQD			
	4	1,1.10						EOA4 ①	IN -1 & -2 MODEL BLOCK, NEXT ASSY LDW280-54310 WAS LDW280-53310	LM-4 THRU LM-15	✓		EC	Jal	

CHG APPROVED	LTR	GROUP LDR	VEH DES.INT.	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY				
	A	~	J. Pusateri 1/3/67	1-4-67							

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11106	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY -2	QTY PER ASSEMBLY -1	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
8	8	NAS697A-03	E		NUT PLATE	STD PART						
		MS20426AD3	↑		RIVET	STD PART						
1		LDW280-11106-12			BRACKET	AL ALLOY EXTR	QQ-A-200/3	2024-T3511	DIE # 78K × 6 1/4	NONE	88	
	1	LDW280-11106-11			BRACKET	AL ALLOY EXTR	QQ-A-200/3	2024-T3511	DIE # 78K × 6 1/4	NONE	88	
		LDW280-11106-2	↓		BRACKET ASSY					NONE	NONE	
		LDW280-11106-1	E		BRACKET ASSY					NONE	NONE	

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11106	A

SCALE NONE

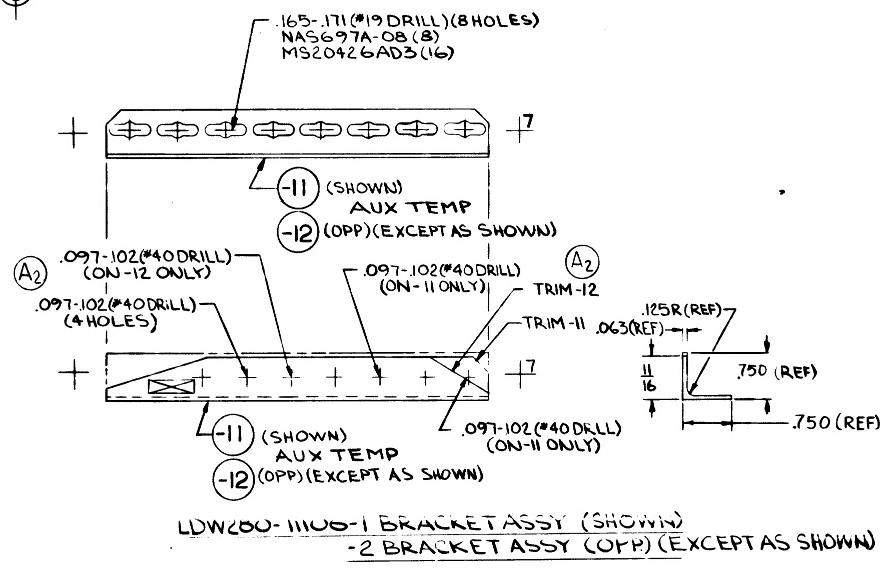
SHEET 2.00

ENG 77.2 5-64

01

NAS 9-1100

FROM 6H


.165-.171 (#19 DRILL) (8 HOLES)
NAS697A-08 (8)
MS20426AD3 (16)
7
-11 (SHOWN)
AUX TEMP
-12 (OPP) (EXCEPT AS SHOWN)
A2
.097-.102 (#40 DRILL) (ON -12 ONLY)
.097-.102 (#40 DRILL) (4 HOLES)
.097-.102 (#40 DRILL) (ON -11 ONLY)
A2
TRIM -12
TRIM -11
.125R (REF)
.063 (REF)
11/16
.750 (REF)
.750 (REF)
7
-11 (SHOWN)
AUX TEMP
-12 (OPP) (EXCEPT AS SHOWN)
.097-.102 (#40 DRILL) (ON -11 ONLY)
15
10

LDW280-11106-1 BRACKET ASSY (SHOWN)
-2 BRACKET ASSY (OPP) (EXCEPT AS SHOWN)

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ƒ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LM	SIZE C	CODE IDENT NO. 26512	LDW280-11106	R A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

LDW280-11106 A

FOR PHOTO REPRODUCTION 1

K2

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER *

DWG. NO LDW280-11106		EO NO. B1
CONTROL INFO NO. LDW280M-5551		

FOR -1 & -2:
REMOVE LM-4(34) THRU LM-15(45) REQ'TS

(*THESE PARTS WERE REMOVED FROM
LDW280-54310 BY REV. A-3
DATED 1-18-67)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	3

REASON FOR EO	DESCRIPTION OF EO	GAEC C EO RELEASE ®
TO MAKE DRAWING AGREE WITH N/A'S. *	FOR-1 & -2: REMOVED LM-4(34) THRU LM-15(45) REQ'TS	JK 2/28/7

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-4(34)	
		THRU	
		LM-15(45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY	Jap				BW		RMC Ⓦ	
✓			✓	DATE	2/24/67			2/24/67	2 27		2-27-67	2/28/67
REVISE DWG	RECORD EO	REWORK	SCRAP	6	VD1	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	BRACKET ASS'Y A/S M/S EQUIP LINES	LDW280-11106	B1

ISSUED BY M. SHAPIRO X1153 SECTION EQUIP LINES GROUP NO. 335 PL 35

01 NAS 9-1100

		-9	-7	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								NAS1097AD3	E	RIVET	STD PART						
		1	1	1	1	1		NAS697A08		NUT, PLATE	STD PART						
								LDW280-11107-21		PLATE	AL ALY SH	QQ-A-250/4	2024-T3	.040 X 1 1/8 X 2	NONE	88	
		1						-19		CLIP				.040 X 1 1/8 X 6 5/8			
			1					-17						.040 X 1 1/8 X 5 5/8			
				1				-15						.040 X 1 1/8 X 5 1/4			
					1			-13						.040 X 1 1/8 X 4 3/4			
						1		-11		CLIP	AL ALY SH	QQ-A-250/4	2024-T3	.040 X 1 1/8 X 5 1/4	NONE	88	
								-9		CLIP ASSY							
								-7									
								-5									
								-3									
								LDW280-11107-1	E	CLIP ASSY							

QTY PER ASSEMBLY

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11107	A

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

LDW280-11107 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23123	TEST RIG	2
	LDW280-53123	LEM-15(45)	1
		LEM-14(44)	
		LEM-13(43)	
		LEM-12(42)	
		LEM-11(41)	
		LEM-10(40)	
		LEM-9(39)	
		LEM-8(38)	
		LEM-7(37)	
		LEM-6(36)	
		LEM-5(35)	
		LEM-4(34)	
	LDW280-53123	LEM-3(33)	
	LDW280-28123	LEM-2(32)	
	LDW280-28123	LEM-1(31)	
LEM	LDW280-28123	LTA-8(18)	1
PART NO. LDW280-11107-21		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23123	TEST RIG	2 EA
	LDW280-53123	LEM-15(45)	1 EA
		LEM-14(44)	
		LEM-13(43)	
		LEM-12(42)	
		LEM-11(41)	
		LEM-10(40	
		LEM-9(39)	
		LEM-8(38)	
		LEM-7(37)	
		LEM-6(36)	
		LEM-5(35)	
		LEM-4(34)	
	LDW280-53123	LEM-3(33)	
	LDW280-28123	LEM-2(32)	
	LDW280-28123	LEM-1(31)	
LEM	LDW280-28123	LTA-8(18)	1 EA
PART NO. LDW280-11107-1,-3,-5,-7-9		GAEC SCH NO. 31-1	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	300						
REV	B	B	A	B						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO B	
LAST DASH NO. USED	-21	PRIM NO. 215	LE(001) Wf 10/3 B

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES
±1/32 ±.010 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM * 1
DOCUMENTATION TYPE II

DRAWN BY	MELMED 5-23-66	RELIABILITY	
LAYOUT BY	ROCKLEIN		
CHECKED BY			
GROUP LDR	PHILLIP 9/12/66		
VEH DESINT	BISCHOFF 9/12		
STRUCTURES	HILDERMAN 9/13	PROJ ENGR	J. ALBER 9/14
STRUCTURES	FES BW 9/13	REL GROUP	A. CARAMANICA 9/16
WEIGHTS	DJL RAHARD 9/14		

® GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP
ASCENT STAGE - MID SECT - WATER MODULE
SHIELD SUPPORT

SIZE	CODE IDENT NO.		
B	26512	LDW280-11107	B
SCALE	NONE	SHEET 1.00 OF 4.00	

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-11107 NO CHANGE

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
									RETRACED NO CHG. LAST REV NO CHG ADDED SHEETS 1.10, 2.00 & 3.00 SH 1 OF 4 WAS 1 OF 1	NOTED			MELMED 5-26-66		
A	1	3.00						A1	ON-15, -17 1/8 BR WAS 3/32 BR		-15,-17				
	2	2.00, 3.00						A2	FOR -1, -3, -5, -7, -9 NAS1097AD3 (10) WAS MS20426AD3 (10)		-1, -3, -5 -7, -9				
	3	3.00						Ⓡ	ADDED 3/16 R 2 PLACES ON-17 AND NOTE #1. & 7 RUBBER STAMP INFORMATION -1. THRU -21		NOT	REQD	GB		
B	1	1.00 1.10						EOB1	IN MOD/BLK: ADDED TEST RIG EFF TO -1, -3, -5, -7, -9 & -21; QTY 2 EACH N/A LDW280-23123	LTA-3, -8 LEM-1 THRU -6 TEST RIG	✓		BELTRAMI 7-21-66 RS		
	2	1.00, 3.00	6A					EOB2	IN FLD FOR -19 REVISED DIM. 4 1/4 (WAS 5 1/4)						
	3	1.00, 1.10						EOB3	REMOVED LTA-3 EFF. FOR -1, -3, -5, -7, -9, & -21	LTA-3		✓	DOLSEN 8-1-66		
	4	1.00 1.10							IN MOD/BLK: FOR -1, -3, -5, -7, -9 & -21 EFF LEM-3 THRU LEM-6 N/A WAS LDW 280-23123 & ADDED EFF LEM-7 THRU LEM-15 N/A LDW 280-53123	NOTED	NOT	REQD	HERB. SCHWETER 8-25-66 WCG	RMC	

FOR CONTINUATION OF REVISIONS SEE SHEET ________

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

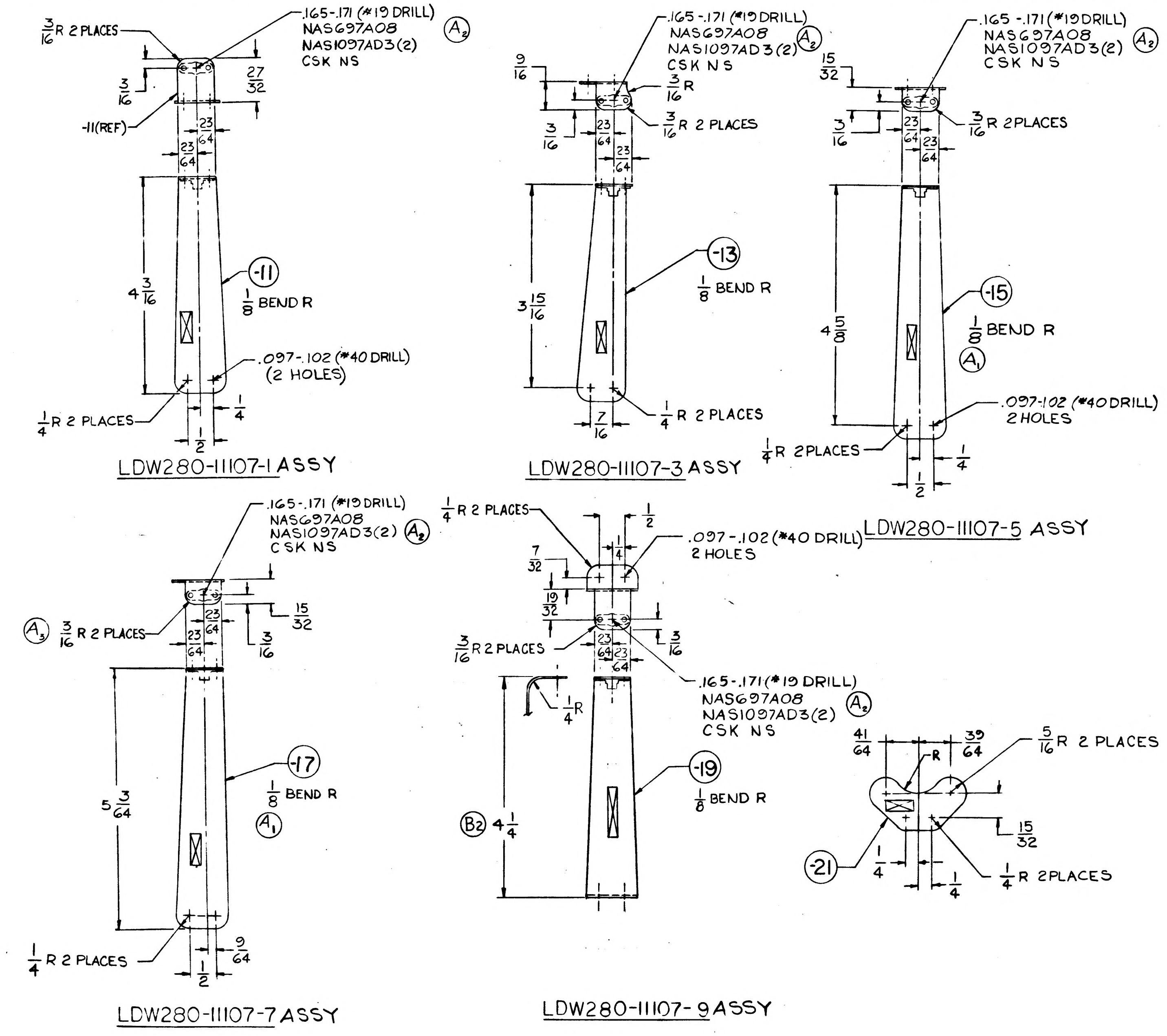
SIZE	CODE IDENT NO.		
B	26512	LDW280-11107	B
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

LDW280-11107 B



3/16 R 2 PLACES
.165-.171 (#19 DRILL)
NAS697A08
NAS1097AD3(2)
CSK NS
A2
27/32
3/16
-11(REF)
23/64
23/64
-11
4 3/16
1/8 BEND R
.097-.102 (#40 DRILL)
(2 HOLES)
1/4 R 2 PLACES
1/4
1/2
LDW280-11107-1 ASSY
9/16
.165-.171 (#19 DRILL)
NAS697A08
NAS1097AD3(2)
CSK NS
A2
3/16 R
3/16 R 2 PLACES
3/16
23/64
23/64
-13
3 15/16
1/8 BEND R
7/16
1/4 R 2 PLACES
LDW280-11107-3 ASSY
15/32
.165-.171 (#19 DRILL)
NAS697A08
NAS1097AD3(2)
CSK NS
A2
3/16 R 2 PLACES
3/16
23/64
23/64
-15
4 5/8
1/8 BEND R
A1
.097-.102 (#40 DRILL)
2 HOLES
1/4 R 2 PLACES
1/4
1/2
LDW280-11107-5 ASSY
.165-.171 (#19 DRILL)
NAS697A08
NAS1097AD3(2)
CSK NS
A2
A3
3/16 R 2 PLACES
15/32
3/16
23/64
23/64
-17
5 3/64
1/8 BEND R
A1
1/4 R 2 PLACES
9/64
1/2
LDW280-11107-7 ASSY
1/4 R 2 PLACES
1/2
1/4
7/32
.097-.102 (#40 DRILL)
2 HOLES
19/32
3/16 R 2 PLACES
3/16
23/64
23/64
.165-.171 (#19 DRILL)
NAS697A08
NAS1097AD3(2)
CSK NS
A2
1/4 R
-19
1/8 BEND R
B2
4 1/4
LDW280-11107-9 ASSY
41/64
R
39/64
5/16 R 2 PLACES
15/32
-21
1/4
1/4
1/4 R 2 PLACES

NOTES:
1. INSTALL FASTENERS PER LSP 14-15302.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK
LEM
MODEL OR END ITEM
SIZE D
CODE IDENT NO. 26512
LDW280-11107
B
SCALE FULL
SHEET 3.00

LDW280-11107 B

01 NAS 9-1100

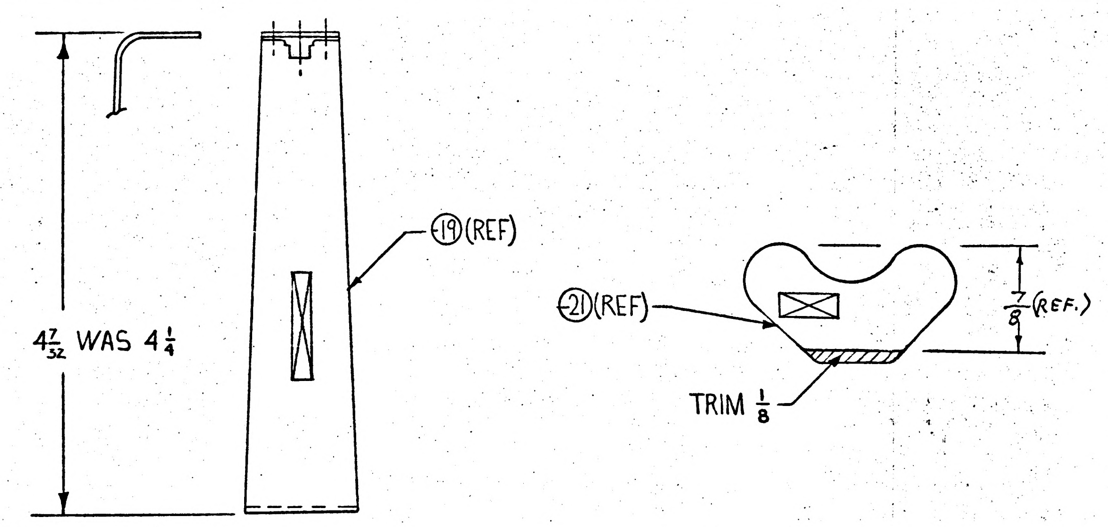
B

ENG 32.1 REV 3-60

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW 280-11107
EO NO. C1
CONTROL INFO NO. LM-3-5443



DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐

3

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE C
IMPROVE FIT ON ASSEMBLY	ON -19, $4\frac{7}{32}$ WAS $4\frac{1}{4}$; ON -21, TRIM $\frac{1}{8}$	JC

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-6 (36)	
		THRU	
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO ☐
DISPOSITION OF PARTS: REWORK ✓ SCRAP ☐

APPROVED BY				—	BM			
DATE	8/4/67			—	8-1-67	8-2-67	8/4/67	8/4/67
	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY C3
DRAWING TITLE: CLIP - ASCENT STAGE - MID SECTION WATER MODULE - SHIELD SUPPORT
DRAWING NO. LDW 280-11107
EO NO. C1

ISSUED BY LIAISON / V.BOLLO, C.SMITH (X2151) SECTION VDI GROUP NO. 335 PL 25

LDW280-11108 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23305	LM-15(45)	1 EA
LM	LDW280-23305	LM-14(44)	1 EA
LM	LDW280-23305	LM-13(43)	1 EA
LM	LDW280-23305	LM-12(42)	1 EA
LM	LDW280-23305	LM-11(41)	1 EA
LM	LDW280-23305	LM-10(40)	1 EA
LM	LDW280-23305	LM-9(39)	1 EA
LM	LDW280-23305	LM-8(38)	1 EA
LM	LDW280-23305	LM-7(37)	1 EA
LM	LDW280-23305	LM-6(36)	1 EA
LM	LDW280-23305	LM-5(35)	1 EA
LM	LDW280-23305	LM-4(34)	1 EA
LM	LDW280-23305	LM-3(33)	1 EA
LM	LDW280-23305	LTA-3(13)	1 EA
PART NO. LDW280-11108-1,-3,-5,-6,-7,-8,-28 & -29		GAEC SCH NO. 31	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	B	B	B	B

LAST SECT LTR USED

LAST DASH NO. USED -29

GRUMMAN REL INFO B

PRIM NO. 215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	BONELLI 5/6/66
LAYOUT BY	BONELLI 5/6/66
CHECKED BY	
GROUP LDR	J. PUSATERI 5/13
VEH DES INT	W. BISCHOFF 5/13
STRUCTURES	F. BUNCE 5/13
STRUCTURES	R. HILDERMAN 5/4
WEIGHTS	D. ROBESCH 5/17
PROJ ENGR	J. ALBER 5/18
REL GROUP	A. CARAMANICA 5/19

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET ASSEMBLY
ASCENT STAGE CABIN ~ FRONT
FACE EQUIPMENT LINES

SIZE B CODE IDENT NO. 26512 LDW280-11108 B

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW 280-11108 NOCHG REV 'A' 5-19-66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED NO CHG LAST REV "A" LOFTED DWG. WAS DIM ~ ADDED SHEETS 1.10, 2.00 & 3.00.	R.SVOBODA	10-28-66			RMG 11-10-66	
B	1	1.00 & 1.10						EOBI	IN MOD/BLK FOR -1,-3,-5,-6,-7,-8,-28 & -29 ADDED EFFECTIVITIES LM-4 THRU LM-15.	NOTED	NOT	REQD	SVOBODA 10-28-66		

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11108	B
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

-8	-7	-6	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
4	4	5	5	4	4		GR500A-4C	E	RIVET	GRUMMAN STD						
							LDW280-11108-29	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 × 3 × 7	NONE	88	
							LDW280-11108-28	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 × 3 × 7	NONE	88	
1	1						LDW280-11108-25	E	NUT-CHANNEL	NAS688-P6-9			ACT. LG 6 3/4			
		1	1				LDW280-11108-23	E	NUT-CHANNEL	NAS688-P6-10			ACT. LG 7 1/2			
				1	1		LDW280-11108-21	E	NUT-CHANNEL	NAS688-P6-7			ACT. LG 5 1/4			
1							LDW280-11108-18	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 × 3 × 8	NONE	88	
	1						LDW280-11108-17	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 × 3 × 8	NONE	88	
		1					LDW280-11108-16	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.045 × 3 × 9	NONE	88	
			1				LDW280-11108-15	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.045 × 3 × 9	NONE	88	
				1			LDW280-11108-13	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 × 3 × 9	NONE	88	
					1		LDW280-11108-11	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.045 × 3 × 9	NONE	88	
							LDW280-11108-8	E	BRACKET ASSY					NONE	NONE	
							LDW280-11108-7	E	BRACKET ASSY							
							LDW280-11108-6	E	BRACKET ASSY							
							LDW280-11108-5	E	BRACKET ASSY							
							LDW280-11108-3	E	BRACKET ASSY							
							LDW280-11108-1	E	BRACKET ASSY					NONE	NONE	

QTY PER ASSEMBLY

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ALODINE	LSP14-9030

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11108	B

SCALE NONE

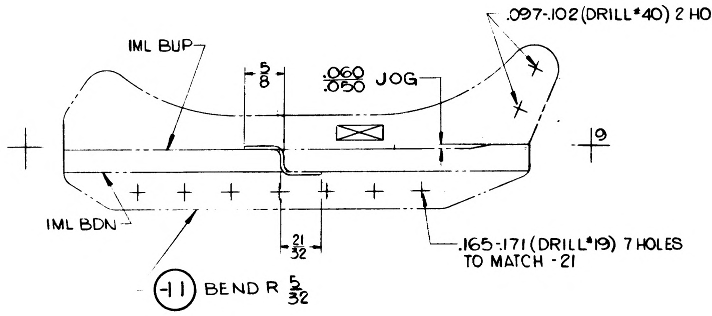
SHEET 2.00

ENG 77.2 7-65

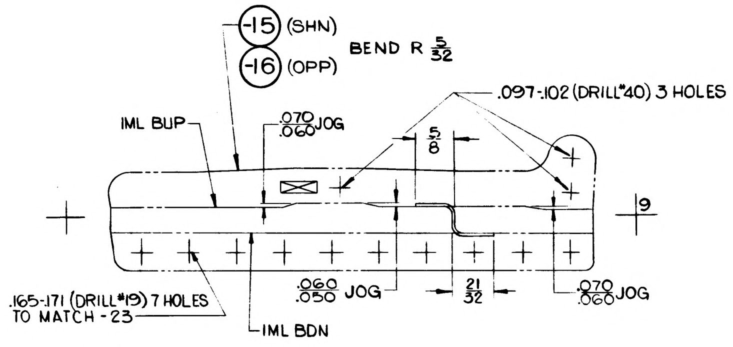
01

NAS 9-1100

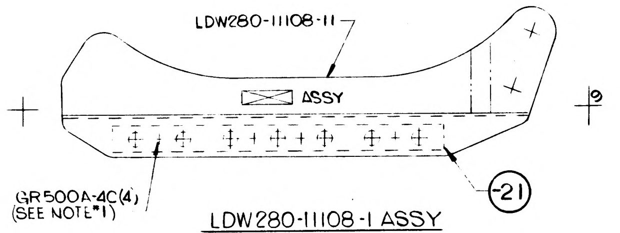
NOTES:
1. INSTALL FASTENERS PER LSP-14-15303



.097-.102 (DRILL #40) 2 HOLES
IML BUP
5/8
.060 .050 JOG
9
IML BDN
21/32
.165-.171 (DRILL #19) 7 HOLES TO MATCH -21
-11 BEND R 5/32

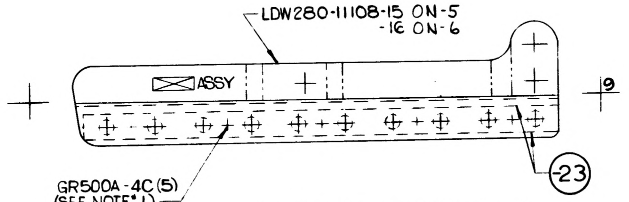


-15 (SHN)
-16 (OPP)
BEND R 5/32
.097-.102 (DRILL #40) 3 HOLES
IML BUP
.070 .060 JOG
5/8
9
.165-.171 (DRILL #19) 7 HOLES TO MATCH -23
.060 .050 JOG
21/32
.070 .060 JOG
IML BDN



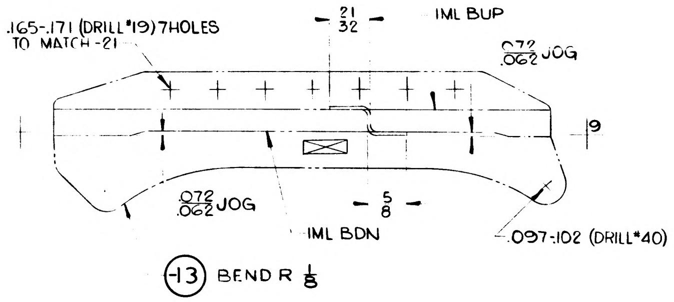
LDW280-11108-11
ASSY
9
GR500A-4C(4) (SEE NOTE #1)
-21

LDW280-11108-1 ASSY

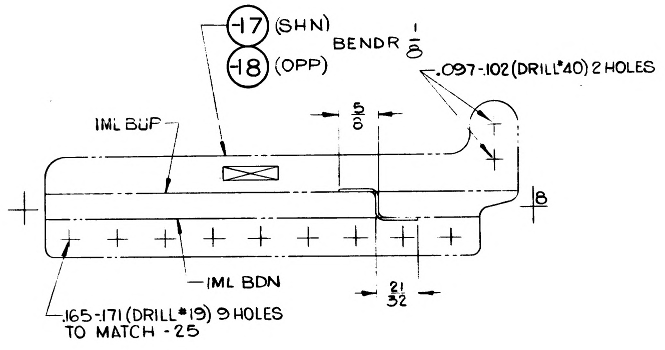


LDW280-11108-15 ON -5
-16 ON -6
ASSY
9
GR500A-4C(5) (SEE NOTE #1)
-23

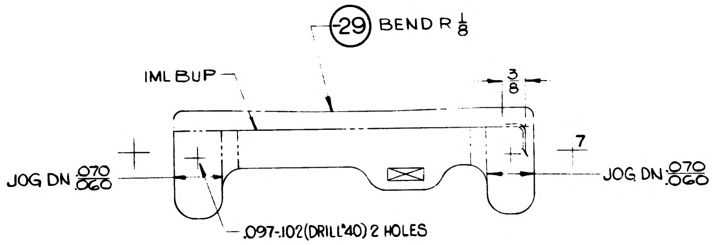
LDW280-11108-5 ASSY (SHN)
-6 ASSY (OPP)



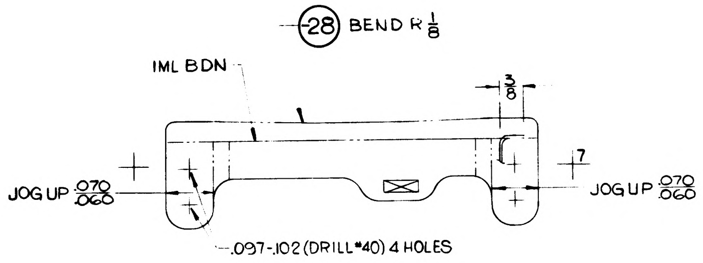
.165-.171 (DRILL #19) 7 HOLES TO MATCH -21
21/32
IML BUP
.072 .062 JOG
9
.072 .062 JOG
5/8
IML BDN
.097-.102 (DRILL #40)
-13 BEND R 1/8



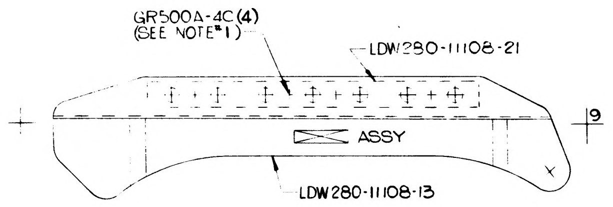
-17 (SHN)
-18 (OPP)
BEND R 1/8
.097-.102 (DRILL #40) 2 HOLES
IML BUP
5/8
8
IML BDN
21/32
.165-.171 (DRILL #19) 9 HOLES TO MATCH -25



-29 BEND R 1/8
IML BUP
3/8
7
JOG DN .070 .060
JOG DN .070 .060
.097-.102 (DRILL #40) 2 HOLES

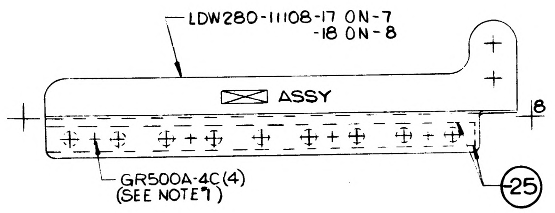


-28 BEND R 1/8
IML BDN
3/8
7
JOG UP .070 .060
JOG UP .070 .060
.097-.102 (DRILL #40) 4 HOLES



GR500A-4C(4) (SEE NOTE #1)
LDW280-11108-21
ASSY
9
LDW280-11108-13

LDW280-11108-3 ASSY



LDW280-11108-17 ON -7
-18 ON -8
ASSY
8
GR500A-4C(4) (SEE NOTE #1)
-25

LDW280-11108-7 ASSY (SHN)
-8 ASSY (OPP)

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	√

LDW280-11108B

0-1 NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LM	SIZE E	CODE IDENT NO. 26512	LDW280-11108 B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

FOR PHOTO 1 REPRODUCTION K2

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

~~DWG.~~ E.O. NO. LEO 280
EO NO. 477
CONTROL INFO NO. LDW280-A5577

ON THE FOLLOWING DRAWINGS CHANGE GR500A-4C RIVETS TO GR501A-4B CSK. RIVETS.

DWG. NO.	CHG. NO.
LDW280-10965 ✓	B3
11024 ✓	C6
11108 ✓	C1
11109 ✓	A5
11135 ✓	B5
11136 ✓	C2
11137 ✓	B4
11139 ✓	B4
11280 ✓	B1
11281 ✓	B3
11283 ✓	B4
11501	B3
LDW280-11503	B2

DETAIL SPEC REQ ☐	CL II ENGRG CHG ☐	CL I ENGRG CHG ☐	3

REASON FOR EO: TO FACILITATE INSTALLATION OF WIRING CLAMPS.

DESCRIPTION OF EO: ON THE ABOVE NOTED DWGS. CHANGE GR500A-4C RIVETS TO GR501A-4B RIVETS.

GAEC C EO RELEASE: FR 2/17/67

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LM7(37) THRU LM-15(45)		

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK ✓ SCRAP

APPROVED BY		V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
						SW			
DATE	1	2/16/67			2/16/67	2-17		2-20-67	2-20-67

PRIORITY: C
DRAWING TITLE: SUPPORT ASSEMBLY
E.O. ~~DRAWING NO.~~ LEO 280
EO NO. 477

ISSUED BY E. STAHL X1153 SECTION V.D.I. GROUP NO. 335 PL 35

01
NAS 9-1100

LDW280-11109 | A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23305	LM-15(45)	2EA
		LM-14(44)	
		LM-13(43)	
		LM-12(42)	
		LM-11(41)	
		LM-10(40)	
		LM-9(39)	
		LM-8(38)	
		LM-7(37)	
		LM-6(36)	
		LM-5 (35)	
		LM-4 (34)	
		LM-3 (33)	
LM	LDW280-23305	LTA-3(13)	2EA.

PART NO. LDW280-11109-7,-9,-10

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23305	LM-15(45)	1EA.
		LM-14 (44)	
		LM-13 (43)	
		LM-12 (42)	
		LM-11 (41)	
		LM-10 (40)	
		LM-9 (39)	
		LM-8 (38)	
		LM-7 (37)	
		LM-6 (36)	
		LM-5 (35)	
		LM-4 (34)	
		LM-3 (33)	
LM	LDW280-23305	LTA-3 (13)	1EA

PART NO. LDW280-11109-3,-5,-31,-35

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23305	LM-15(45)	3EA.
		LM-14(44)	
		LM-13(43)	
		LM-12(42)	
		LM-11(41)	
		LM-10(40)	
		LM-9(39)	
		LM-8(38)	
		LM-7(37)	
		LM-6(36)	
		LM-5 (35)	
		LM-4 (34)	3EA.
		LM-3 (33)	1EA.
LM	LDW280-23305	LTA-3(13)	1EA.

PART NO. LDW280-11109-1

WORK PKG FUNCTION NO. .10

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A			
LAST DASH NO. USED	-35	PRIM NO.	JK(001)		
		215	ME-111	3/29/9	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS — ANGLES
1/32 .020 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM
DOCUMENTATION TYPE II

DRAWN BY	BONELLI 5-5-66		
LAYOUT BY	BONELLI 5-5-66		
CHECKED BY			
GROUP LDR	J.A PUSATERI 5-13		
V.D.I.	W.BISCHOFF 5-13		
STRUCT	B.W. 5-13	PROJ ENGR	J.ALBER/R.M.C. 5-18
STRUCT	R.HILDERMAN 5-14	REL GROUP	A.CARAMANICA 5-21
WEIGHT	D.ROBESCH 5-17		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET ASSEMBLY
A/S CABIN F/F EQUIPMENT LINES

SIZE	CODE IDENT NO.		
B	26512	LDW280-11109	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

SUPERSEDES LDW280-11109 N/C 5/21/66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED N/C LAST REV. N/C S.CARANO 3-25-69	ADDED	SH. 2.00 & 3.00				
A	1	1.00, 2.00 3.00	6F 6G						INC E.O.-A1 ADDED SH 1.10	LTA-3 (13) LM-3 (33)			S.CARANO 3-25-69		
	2	1.00							INC E.O.-A2	LM-4 THRU LM-15					
	3	1.00							INC E.O.-A3						
	4	3.00	6G						INC E.O.-A4	LTA-3 (13) LM-3 THRU LM-15					
	5	3.00, 2.00	7G 6&4D 7&4C						INC LEO 280-477	LM-7 THRU LM-15					
	6	3.00	8G					Ⓡ	INC EO A6	LM-6 THRU LM-15		H.D.		J.K.	3-29-69

CHG APPROVED

LTR	GROUP LDR	V.D.I.	STRUCT	STRUCT	WEIGHTS					
A										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11109	A

SCALE NONE SHEET 1.10

Ⓐ

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY																		
-35	-31	-10	-9	-7	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
4	4	2		3	2	4	4		GR500A-4C	E	RIVET	GRUM. STD.						
4	4	2		3	2	4	4		GR501A-4B	E	RIVET	GRUM. STD.						
				1					LDW280-11109-27	E	NUT CHANNEL	NAS688-P6-6			L = 4 1/2			
					1				-25			-4			L = 3			
						1			-23			-7			L = 5 3/16			
1	1						1		-21		NUT CHANNEL	NAS688-P6-7			L = 5 1/4			
1									-33		BRACKET	AL ALLOY	QQ-A-355	2024-T3	.040 X 2 X 3 1/2			
	1								-29						.040 X 2 X 3 1/2	NONE	38	
		1							-20						.040 X 2 X 3 1/2			
			1						-19						.040 X 2 X 3 1/2			
				1					-17						.050 X 2 X 4 3/4			
					1				-15						.050 X 2 X 3 1/4			
						1			-13						.040 X 2 X 5 3/4			
							1		-11		BRACKET	AL ALLOY	QQ-A-355	2024-T3	.040 X 3 X 5 1/2	NONE	38	
									-35		BRACKET ASSY	SEE DWG						
									-31									
									-10									
									-9									
									-7									
									-5									
									-3									
									LDW280-11109-1	E	BRACKET ASSY	SEE DWG						

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

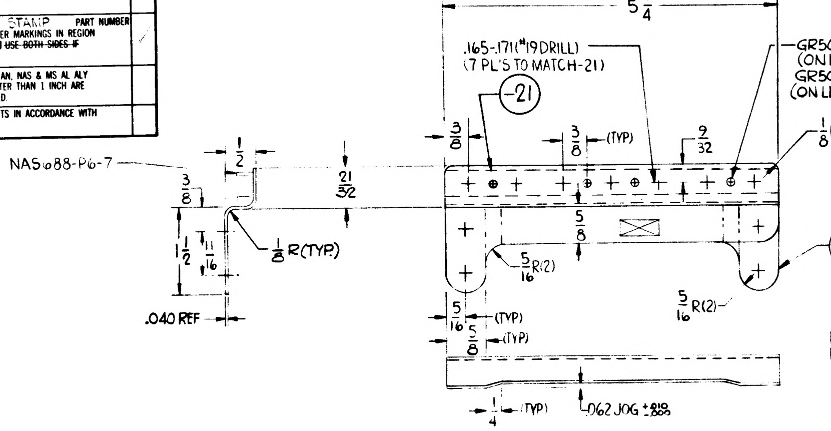
SIZE	CODE IDENT NO.		
B	26512	LDW280-11109	A
SCALE NONE		SHEET 2.00	

ENG 77.2 7-55

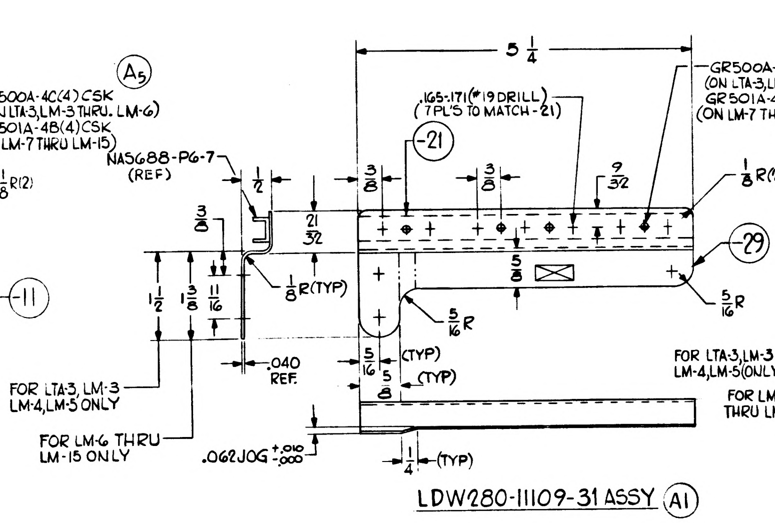
01 NAS 9-1100

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

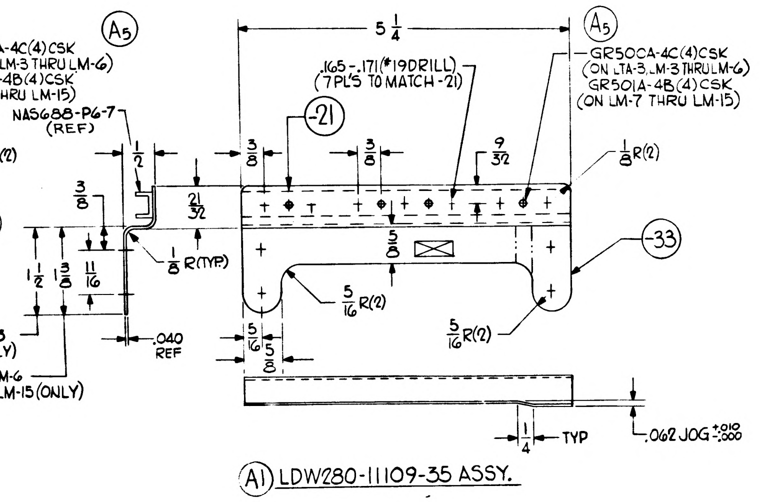
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
INSTALL RIVETS IN ACCORDANCE WITH	


NAS688-P6-7
.165-.171(#19 DRILL)
(7 PL'S TO MATCH-21)
-21
5 1/4
3/8
3/8 (TYP)
9/32
1/8 R(2)
GR500A-4C(4)CSK
(ON LTA-3, LM-3 THRU. LM-6)
GR501A-4B(4)CSK
(ON LM-7 THRU LM-15)
A5
1/2
21/32
3/8
1/8 R(TYP.)
1 1/2
11/16
.040 REF
5/8
5/16 R(2)
-11
5/16 R(2)
5/16 (TYP)
5/8 (TYP)
1/4 (TYP)
.062 JOG +.010 -.000

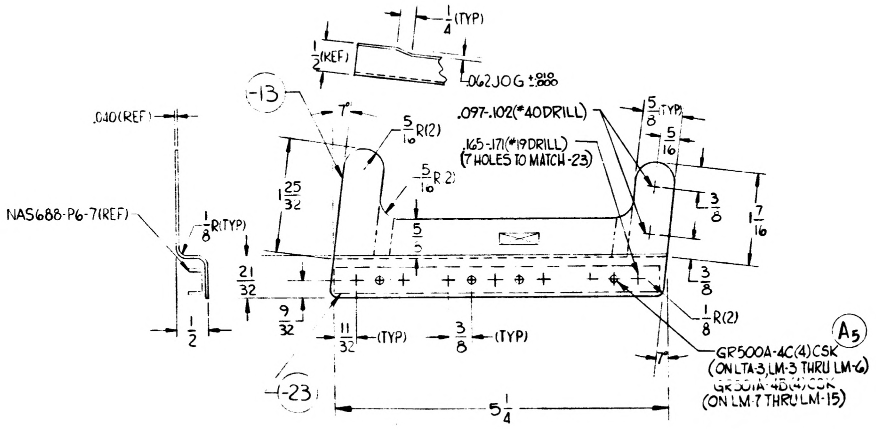
LDW280-11109-1 ASSY


5 1/4
A5
.165-.171(#19 DRILL)
(7 PL'S TO MATCH-21)
GR500A-4C(4)CSK
(ON LTA-3, LM-3 THRU LM-6)
GR501A-4B(4)CSK
(ON LM-7 THRU LM-15)
NAS688-P6-7
(REF)
-21
1/2
3/8
3/8
9/32
1/8 R(2)
21/32
3/8
1/8 R(TYP)
-29
5/8
5/16 R
5/16 R
1 1/2
1 3/8
11/16
.040 REF.
5/16 (TYP)
5/8 (TYP)
FOR LTA-3, LM-3
LM-4, LM-5 ONLY
FOR LM-6 THRU
LM-15 ONLY
.062 JOG +.010 -.000
1/4 (TYP)

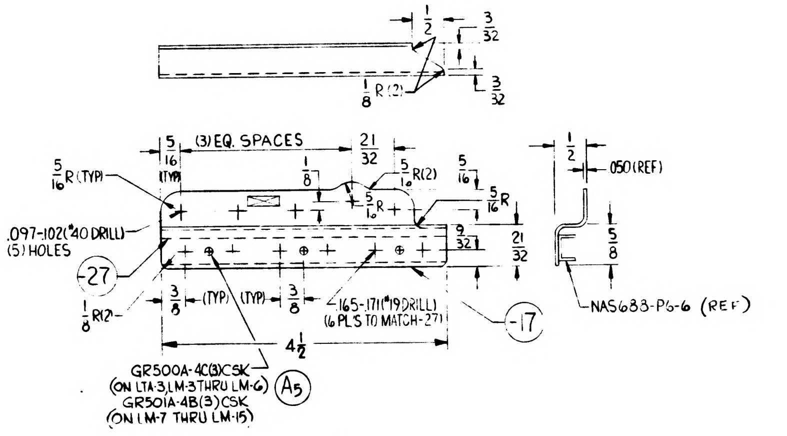
LDW280-11109-31 ASSY (A1)


5 1/4
A5
.165-.171(#19 DRILL)
(7 PL'S TO MATCH-21)
GR500A-4C(4)CSK
(ON LTA-3, LM-3 THRU LM-6)
GR501A-4B(4)CSK
(ON LM-7 THRU LM-15)
NAS688-P6-7
(REF)
-21
1/2
3/8
3/8
9/32
1/8 R(2)
21/32
3/8
1/8 R(TYP)
-33
5/8
5/16 R(2)
5/16 R(2)
1 1/2
1 3/8
11/16
.040 REF
FOR LTA-3, LM-3
LM-4, LM-5 (ONLY)
FOR LM-6
THRU LM-15 (ONLY)
5/16
5/8
1/4 TYP
.062 JOG +.010 -.000

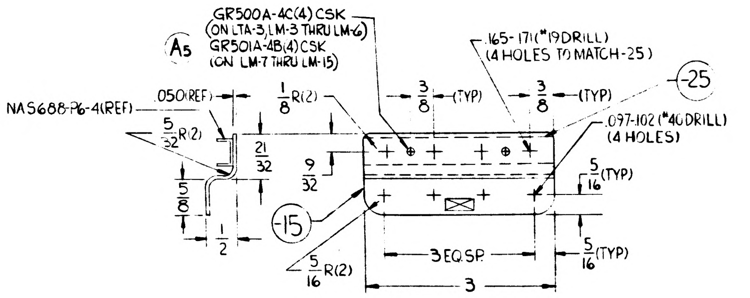
(A1) LDW280-11109-35 ASSY.


1/4 (TYP)
1/2 (REF)
.062 JOG +.010 -.000
-13
7°
5/16 R(2)
.097-.102(#40 DRILL)
.165-.171(#19 DRILL)
(7 HOLES TO MATCH-23)
5/8 (TYP)
5/16
.040(REF)
1 25/32
5/16 R(2)
NAS688-P6-7(REF)
1/8 R(TYP)
5/8
3/8
1 7/16
21/32
3/8
9/32
1/2
11/32 (TYP)
3/8 (TYP)
1/8 R(2)
A5
GR500A-4C(4)CSK
(ON LTA-3, LM-3 THRU LM-6)
GR501A-4B(4)CSK
(ON LM-7 THRU LM-15)
7°
-23
5 1/4

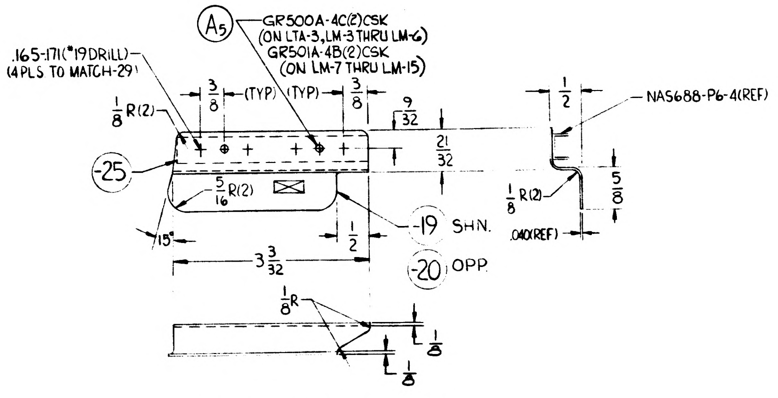
LDW280-11109-3 ASSY


1/2
3/32
1/8 R(2)
3/32
5/16 (TYP)
(3) EQ. SPACES
21/32
5/16 R(TYP)
1/8
5/16 R(2)
5/16
5/16 R
5/16 R
1/2
.050(REF)
.097-.102(#40 DRILL)
(5) HOLES
9/32
21/32
5/8
-27
1/8 R(2)
3/8 (TYP)
(TYP) 3/8
.165-.171(#19 DRILL)
(6 PL'S TO MATCH-27)
-17
NAS688-P6-6 (REF)
4 1/2
GR500A-4C(3)CSK
(ON LTA-3, LM-3 THRU LM-6)
GR501A-4B(3)CSK
(ON LM-7 THRU LM-15)
A5

LDW280-11109-7 ASSY


GR500A-4C(4) CSK
(ON LTA-3, LM-3 THRU LM-6)
GR501A-4B(4) CSK
(ON LM-7 THRU LM-15)
A5
.165-.171(#19 DRILL)
(4 HOLES TO MATCH-25)
-25
NAS688-P6-4(REF)
.050(REF)
1/8 R(2)
3/8 (TYP)
3/8 (TYP)
.097-.102 (#40 DRILL)
(4 HOLES)
5/32 R(2)
21/32
9/32
5/8
5/16 (TYP)
-15
1/2
3 EQ.SP.
5/16 (TYP)
5/16 R(2)
3

LDW280-11109-5 ASSY


A5
GR500A-4C(2)CSK
(ON LTA-3, LM-3 THRU LM-6)
GR501A-4B(2)CSK
(ON LM-7 THRU LM-15)
.165-.171(#19 DRILL)
(4 PLS TO MATCH-29)
1/8 R(2)
3/8 (TYP)
(TYP) 3/8
9/32
1/2
NAS688-P6-4(REF)
21/32
-25
5/16 R(2)
1/8 R(2)
5/8
.040(REF)
-19 SHN.
15°
1/2
3 3/32
-20 OPP.
1/8 R
1/8
1/8

LDW280-11109-9 ASSY (SHN.)
-10 ASSY (OPP.)

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE F	CODE IDENT NO. 26512	LDW280-11109	A
SCALE FULL		SHEET 3.00	

ENG 73.5 REV. 5-67

01

NAS 9-1100

PART NO. LDW280-11110-15

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM.	LDW280-23376	LTA-3(13)	1

GAEC SCH NO.

PART NO. LDW280-11110-13

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23039	LTA-3 (13)	2

GAEC SCH NO.

PART NO. LDW280-11110-11

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28039	LEM-2(32)	2
	LDW280-28039	LEM-1(31)	2
	LDW280-28039	LTA-8(18)	2
	LDW280-23039	LEM-6(36)	2
		LEM-5(35)	2
		LEM-4(34)	2
LEM	LDW280-23039	LEM-3(33)	2

GAEC SCH NO. 32-5

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.01	2.00	3.00					
REV	B	B	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -15

GRUMMAN REL INFO A/B

PRIM NO. 207 GE(001) MPIZA JR 5/1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
±1/32 ±.010 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM NO 1
DOCUMENTATION TYPE II

DRAWN BY	OCONNELL 4-26-66	RELIABILITY	
LAYOUT BY	TORRACO		
CHECKED BY	J.S 4-29-66		
GROUP LDR	5/3/66		
VEH. DES. INT	W/R BISCHOFF		
STRUCTURE	5/3	PROJ ENGR	5-10-66
STRUCTURE	5/3	REL GROUP	5-16
WEIGHT	5-10		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

FITTING
ASCENT STAGE - MID SECT. - AFT
EQUIPMENT BAY CAGE STRUT

SIZE B
CODE IDENT NO. 26512
LDW280-11110 B
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 9-64

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	SH CHG LTR	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	APPD
												REWORK	SCRAP			
A	1			☒					A1	EO A1 INITIAL RELEASE - PARTS MADE PER EO JS	NOTED	NOT	REQD	O'CONNELL 4-26-66		
REDRAWN NO CHG. LAST REV. A SH. SIZE "C" WAS "B" E.ERICKSON 8-9-66																
B	1	1.00, 1.10, 2.00 & 3.00							E.O. B1	REMOVED -11 & ADDED -13	LTA-3		✓	ERICKSON 8-16-66		
	2	1.00, 1.10, 2.00 & 3.00							E.O. B2	ADDED -15	LTA-3	NOT	REQD.			

FOR CONTINUATION OF REVISIONS SEE SHEET

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11110	B
SCALE NONE		SHEET 1.01	

5-64

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11110-15	E	FITTING	AL ALLOY SH	QQ-A-250/4	2024-T3	5 x 1½ x .080	NONE	88	
		LDW280-11110-13	E	FITTING	AL ALLOY EXTR	0Q-A-200/3	2024-T3511	DIE#22675 x 1¾	NONE	88	
		LDW280-11110-11	E	FITTING	AL ALLOY EXTR	QQ-A-200/3	2024-T3511	DIE#22675 x 1¾	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11110	B

SCALE NONE

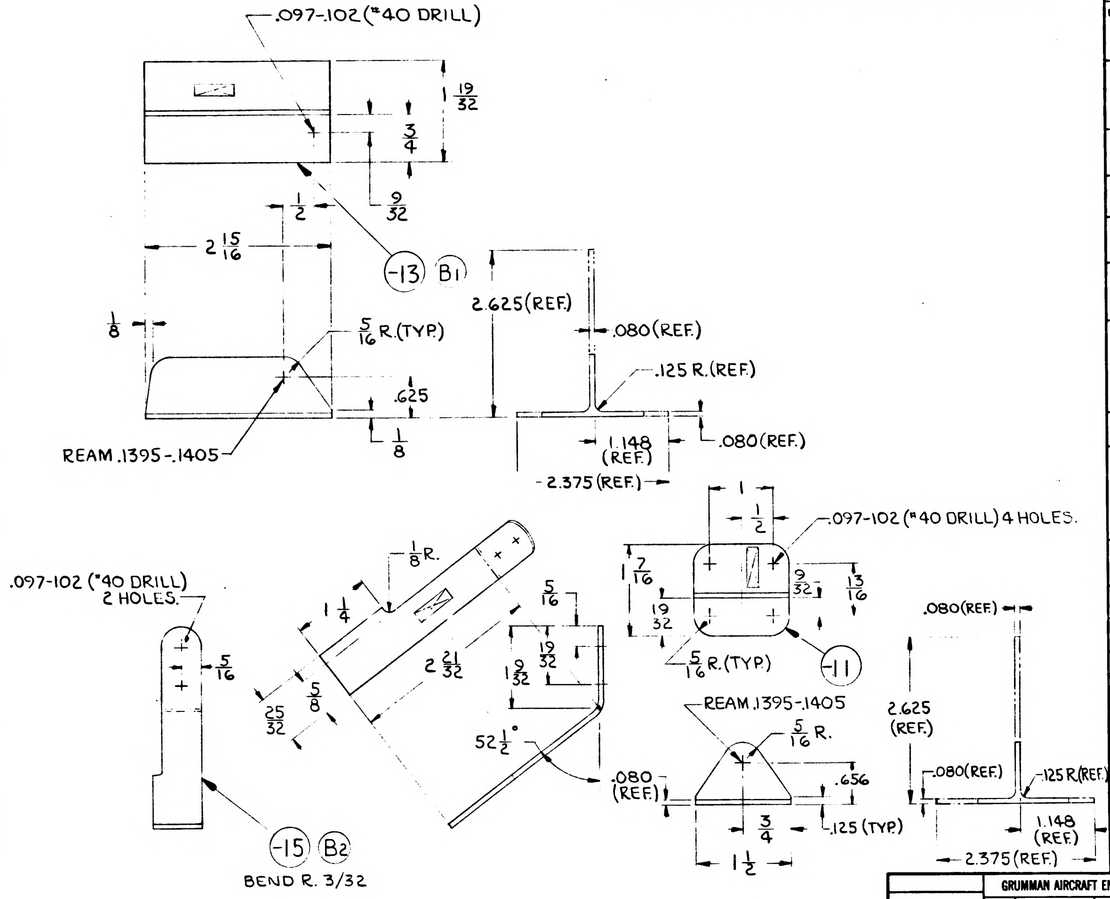
SHEET 2.00

77.2 7-65

01

NAS 9-1100

NOTE.
1-NO TOOLING HOLES PERMITTED IN PARTS.



.097-.102 (#40 DRILL)
19/32
3/4
9/32
1/2
2 15/16
-13 B1
1/8
5/16 R.(TYP.)
.625
1/8
REAM .1395-.1405
2.625(REF.)
.080(REF.)
.125 R.(REF.)
1.148 (REF.)
.080(REF.)
2.375(REF.)
.097-.102 (#40 DRILL) 2 HOLES.
5/16
-15 B2
BEND R. 3/32
1/8 R.
1 1/4
5/8
25/32
2 21/32
5/16
19/32
1 9/32
52 1/2°
.080 (REF.)
1/2
.097-.102 (#40 DRILL) 4 HOLES.
7/16
9/32
13/16
19/32
5/16 R.(TYP.)
-11
REAM .1395-.1405
5/16 R.
.656
3/4
.125 (TYP.)
1 1/2
.080(REF.)
2.625 (REF.)
.080(REF.)
.125 R(REF.)
1.148 (REF.)
2.375(REF.)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	C	26512	LDW280-11110	B
	SCALE FULL			SHEET 3.00

2 SUPERSEDES LDW280-1110 REV "B" 8-16-66

LDW280-11110 B

01 NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 526
CONTROL INFO NO. LDW280 A5914

TO THE FOLLOWING DRAWINGS LISTED BELOW & THEIR DASH NUMBERS * THAT ARE EFFECTIVE ON LM-6(36) ADD EFFECTIVITIES FOR LM-7(37) LM-8(38), LM-9(39), LM-10(40), LM-11(41), LM-12(42), LM-13(43), LM-14(44), LM-15(45). QUANTITIES & N/A REMAIN THE SAME AS LM-6(36.)

DRAWING No.	DASH No.*	CHG. NO.	TITLE	NEXT ASSY
LDW280-10245	-17, -19	C4	ANGLE CAB. L.H WIND	LDW280-23074
-10261	-13,-15,-17,-19,-21	C1	CHAN. M/S BEAM	-54030
-10300	-13, -15	D2	CLIP RH ZO FRM LWR	-54020
-10310	-15	D1	CHAN CAB. WIND AREA	-23074
-10380	-15	C1	SHIM FWD HATCH HINGE	-54083
-10561	-11	A1	WEB M/S ENG SPT. FWD	-23077
-10702	-17	A1	DBLR DOCK TUN.	-23069
-10830	ULTRA SONIC STD. PANELS	B1	FAB. PROC-RCS-HE MDD	H23143
-10833	-11, -13, -15	B2	WEB ECS HEAT EXC SPT	-23253
-10904	-11, -13, -17	C3	SUPT IMU BEAM WIRING	-23031
-23168	-1, -3, -5 & -7	A2	HATCH ASSY DOCK TUNNEL	-23069
M-23139	-1	B1	VEE ASSY CAB NVP - LAF	-23066
-11066	-11, -12	A1	CLIP S BAND ANTENNA	-23246
-11110	-11	C1	FTG AEB CAGE STRUT	-23039
-11117	-17, -19	B1	CHANNEL X253 DECK	-23029
-11117	-11, -13 & -15		CHANNEL X253 DECK	-53476
-11159	-15, -17, -18	B2	LCE SHIELD X253.5	-53476
-11191	-11	C1	SUPT F.F. EQUIP LINES	-54075
-11351	-1 & -3	B2	BRACKET ASSY	-23488
-53078	-1	A7	BEAM INSTL MS 210.25	-54012
H23903	-5	C4	SKIRT ASSY OXID	LDW280-23901
M10555	-1, -2	A1	CLIP LONGERON CABIN	-23048
-28753	-1	A4	SKIN ASSY DS SC	-28750
-23066	-1	B4	FR IN CAB NA BAS SUP	-54002
-23511	NONE	B3	JIG DATA - REF DWG.	NONE
M11108	-1	B1	BOLT ZO R.H SHIELD SUP.	-51199
-25709	-1	A2	SHIELD INSTL DS EC	-25661
-28362	-3	A2	STRAP ASSY CABIN	-54357
-28645	-3	A2	ACCESS COV INST PLSS	-54553

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

3

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LM-7(37) THRU LM-15(45) EFF.

GAEC EO RELEASE: JK 3/27/7

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM-7(37) THRU	LM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK | SCRAP — NOT REQD

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY	Jaf			—				
DATE	3/16/67			—	3-20		3-23-67	3/24/67
6	VOI							

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO.: LEO 280

EO NO.: 526

ISSUED BY A. MAICA X1392 SECTION VEH. DES. INTRE GROUP NO. 535 PL 35

01 NAS 9-1100

LDW280-11116

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW 280-53476	LEM-6 (36)	4
LEM	LDW 280-53476	LEM-5 (35)	4
LEM	LDW 280-53476	LEM-4 (34)	4
LEM	LDW 280-53476	LEM-3 (33)	4
PART NO. LDW 280-11116 -19		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53476	LEM-6 (36)	1 EA
LEM	LDW280-53476	LEM-5 (35)	1 EA
LEM	LDW280-53476	LEM-4 (34)	1 EA
LEM	LDW280-53476	LEM-3 (33)	1 EA
PART NO. LDW280-11116-11, -13, -15 & -17		GAEC SCH NO. 322	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -19

GRUMMAN REL INFO
PRIM NO. 215
LE/001 MP17
VR 5-20

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY OMARA 5/7/66
RELIABILITY ~
LAYOUT BY ROCKLEIN
CHECKED BY J Kartzman 5-11-66
GR LEADER
VEH DES INT 11/5/12
STRUCTURES JEB
STRUCTURES Hilderman 5/10
WEIGHTS W. G. Mandros 5/31
PROJ ENGR Plunkett 1 June 66
REL GROUP Botts 6-2-66

® GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ZEE
ASCENT STAGE-MID SECT- X253.5 DECK

SIZE B
CODE IDENT NO. 26512
LDW280-11116
SCALE NONE
SHEET 1.00 OF 3

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11116-19	E	CLIP	AL ALLOY SH	QQ-A-283	7075	.050 x 1 7/8 x 2	T6	88	
		-17	↑	ANGLE	↑	↑	↑	.050 x 2 3/4 x 17 1/8	↑	↑	
		-15		ANGLE				.050 x 2 1/2 x 17 1/8			
		-13	↓	ZEE	↓	↓	↓	.040 x 5 1/2 x 15 5/8	↓	↓	
		LDW280-11116-11	E	ZEE	AL ALLOY SH	QQ-A-283	7075	.040 x 7 1/4 x 16 1/8	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	AL HEAT TREAT	MIL-H-6088
88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-11116

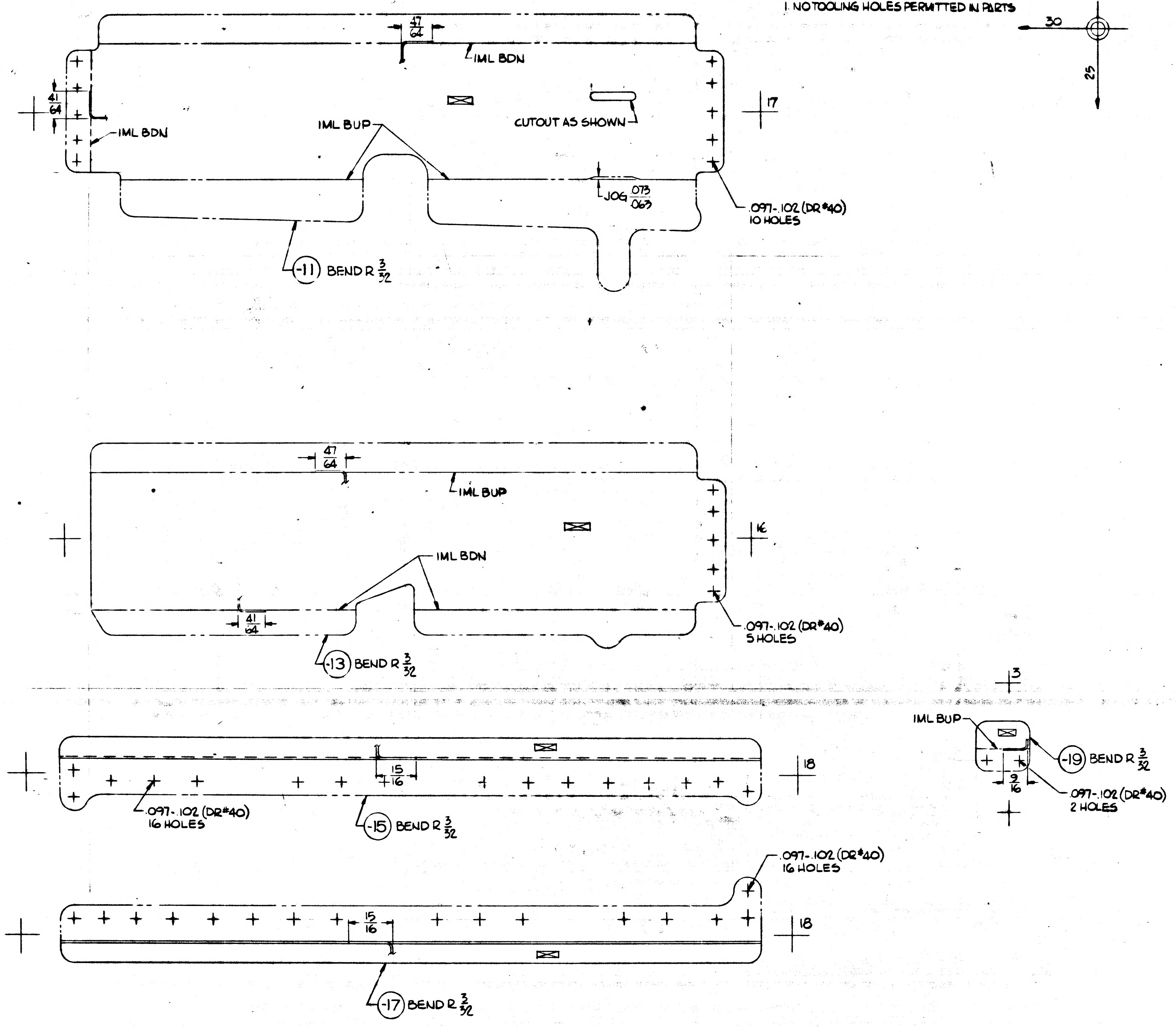
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS



47/64
IML BDN
41/64
IML BDN
IML BUP
CUTOUT AS SHOWN
17
30
25
JOG .073/.063
.097-.102 (DR#40) 10 HOLES
-11 BEND R 3/32
47/64
IML BUP
16
IML BDN
41/64
.097-.102 (DR#40) 5 HOLES
-13 BEND R 3/32
3
IML BUP
-19 BEND R 3/32
9/16
.097-.102 (DR#40) 2 HOLES
15/16
18
.097-.102 (DR#40) 16 HOLES
-15 BEND R 3/32
.097-.102 (DR#40) 16 HOLES
15/16
18
-17 BEND R 3/32

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-11116

LDW280-11116

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM LEM	SIZE F	CODE IDENT NO. 26512	LDW280-11116
SCALE FULL		SHEET 3.00	

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NAS 9-1100

Q1

24 *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280
EO NO. 296
CONTROL INFO NO. LDW230 A 0658

*

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
✓ LDW280-10981	A1	SEE DRAWING
✓ -11015	B1	
✓ -11025	B1	
✓ -11028	B4	
✓ -11035	A2	
✓ -11036	B1	
✓ -11039	A1	
✓ -11045	A1	
✓ -11048	B1	
✓ -11050	C1	
P11055	B2	
P11056	C2	
-11067	B1	
-11068	B1	
H 11069	B1	
-11070	C1	
-11071	A1	
-11072	A1	
-11073	A2	
P11087	B1	
-11103	A1	
-11116	A1	
-11119	B1	
-11123	A2	
-11128	C1	
-11149	A1	
-11153	A1	
-11154	A2	
-11155	A1	
-11156	B1	
-11157	B2	
LDW280-11160	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE: E 10-8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM-9(39)
LEM		LEM-10(40) LEM-11(41)	LEM-12(42)
LEM		LEM-13(43) LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D

APPROVED BY: RP
DATE: 9/23/66
V.D.I.

STRESS GROUP: 9.9

PROJ ENGRG: 10-6-66

10-3-66

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO.: LE0280

EO NO.: 296

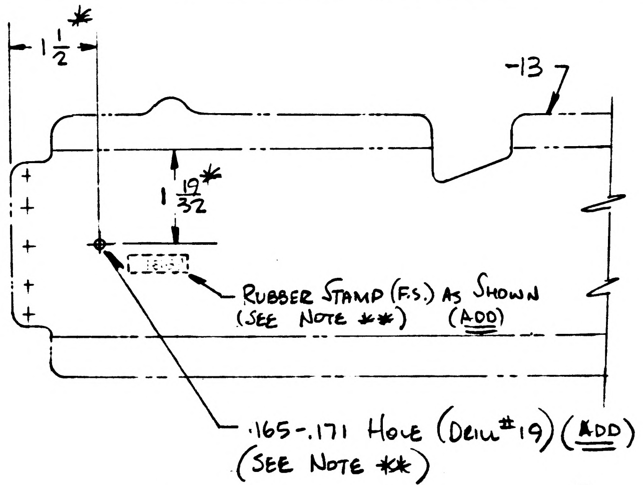
ISSUED BY: L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL. 3

01
NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW 280-11116
EO NO. A2
CONTROL INFO NO. LDW 280A-0662



1 1/2 *
-13
1 19/32 *
RUBBER STAMP (F.S.) AS SHOWN
(SEE NOTE **) (ADD)
.165-.171 HOLE (DRILL #19) (ADD)
(SEE NOTE **)

NOTE **:
STAMP REFERENCE NUMBER "EG131" ON STRUCTURE (F.S.) ADJACENT TO HOLE, BY RUBBER STAMP, PER LSP 14-002 TYPE VII CL. 2. (LETTERING 3/16 HIGH)

* FOR REWORK ON N/A, TOLERANCE ON LOCATIONAL DIMENSIONS ± 1/8

** USE NEXT AVAILABLE NUMBER

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: TO PROVIDE BATTERY GROUND CLAMP LOCATION.

DESCRIPTION OF EO: TO -13: ADDED .165-.171 HOLE. ADDED NOTE **. ADDED RUBBER STAMP IN F/O.

GAEC C EO RELEASE: LE 10-8

MODEL	EFFECTIVITY ~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	~~SUB CONTR UNIT NO.~~
LEM	LEM-3 (33)	THRU	LEM-15 (45)

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
✓		-13		✓	9/23/66			—	BW 10-1		RMC 10-8-66	10/10/66

PRIORITY: C
DRAWING TITLE: ZEE - ASCENT STAGE, MID SECTION, X253.5 DECK
DRAWING NO. LDW 280-11116
EO NO. A2

ISSUED BY Geo W. Rockleın X1441 9/23/66 SECTION VEH. DES. INT. GROUP NO. 335 PL 35
EMF

C

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11116 EO NO. A3
CONTROL INFO NO. LM-3-5066

IN FLD & B/M

REMOVE - LDW280-11116-19
EFF. - LM-3(33) THRU LM-15(45)
4 REQD. PER MOD.

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐ 3

REASON FOR EO: CLIP REPLACED BY LDW280M11081 BY LDW280-53476 E.O.#A1.

DESCRIPTION OF EO: IN FLD & B/M, REMOVED -19, LM-3 THRU LM-15.

GAEC EO RELEASE C JK

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3(33) THRU	LM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK SCRAP -19✓

APPROVED BY	F.I.R.				BM				
DATE	6/5/67				5-31-67	5-31-67	6/9	6/1/67
6	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY C3
DRAWING TITLE: ZEE MIDSECT. ASCENT STAGE -X253.5 DECK
DRAWING NO. LDW280-11116
EO NO. A3

ISSUED BY LIAISON/ALEC HARVEY (X2151) 5-31-67 SECTION V.D.I. GROUP NO. 335 PL 25

01 NAS 9-1100

LDW280-11117 A

PART NO. LDW280-11117-17 & -19

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23029	LM-6 (36)	1 EA.
		LM-5 (35)	
		LM-4 (34)	
	LDW280-23029	LM-3 (33)	
	LDW280-28029	LM-2 (32)	
	LDW280-28029	LM-1 (31)	
	LDW280-28029	LTA-8 (18)	
LM	LDW280-23029	LTA-3 (13)	1 EA.

GAEC SCH NO. 32-5

PART NO. LDW280-11117-11, -13 & -15

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53476	LM-6 (36)	1 EA.
		LM-5 (35)	
		LM-4 (34)	
LM	LDW280-53476	LM-3 (33)	1 EA.

GAEC SCH NO. 32-3

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2:00	3:00
REV	A	A	A	A

LAST SECT LTR USED

LAST DASH NO. USED -19

GRUMMAN REL INFO A

PRIM NO. 215 | VE(OOL) MP-14 | A-11-7-6 | EMF

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS -- ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM *1
DOCUMENTATION TYPE II

DRAWN BY	ROCKLEIN 4-27	RELIABILITY	
LAYOUT BY	ROCKLEIN 4-27		
CHECKED BY			
GR LEADER	R.V. PHILLIPS 5/3/66		
VDI	W. BISCHOFF 5-3		
STRUCTURES	WH BW 5-9	PROJ ENGR	J. ALBER 5-11
STRUCTURES	HILDERMAN 5-9	REL GROUP	BOTTI 5-16
WEIGHTS	D. ROBESCH 5-11		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHANNEL - ASCENT STAGE
MID SECTION, +X 235.5 DECK

SIZE B | CODE IDENT NO. 26512 | LDW280-11117 | A

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11117 N/C 4-27-66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
A	1							Ⓡ	RETRACED NO CHG LAST REV NO CHG, LOFTED DWG WAS DIM. ADDED SH 1.10, 2.00 & 3:00. W.J. WALTONEN 10-20-66						

	LTR	GROUP LDR										
CHG APPROVED												

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11117	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11117 -19	E	CLIP	AL ALLOY SH	QQ-A-250/12	7075-0	.080 × 3 × 4	T6	88	
								-17	↕	↕	↕	↕	↕	.080 × 3 × 4	↕	↕	
								-15						.040 × 1 × 3			
								-13		CLIP				.040 × 1 × 3			
								LDW280-11117-11	E	CHANNEL	AL ALLOY SH	QQ-A-250/12	7075-0	.040 × 6 × 11	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP 14-9030						
T6	AL HEAT TREAT	MIL-H-6088						

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11117	A

SCALE NONE

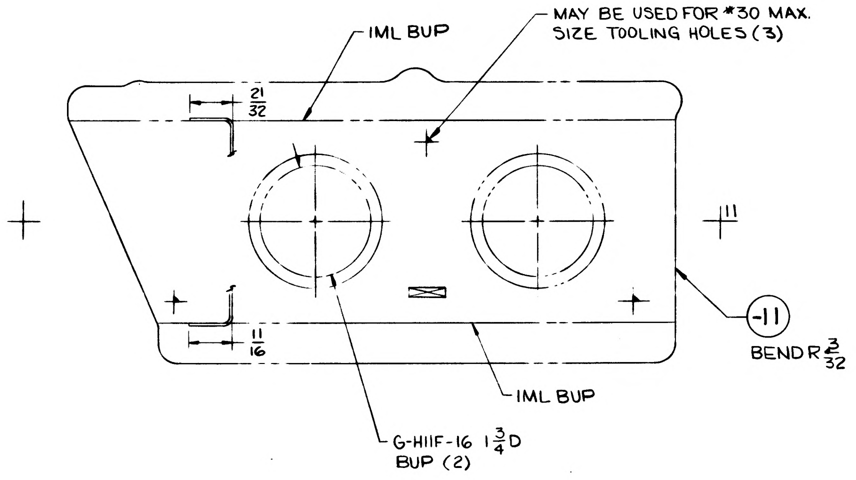
SHEET 2:00

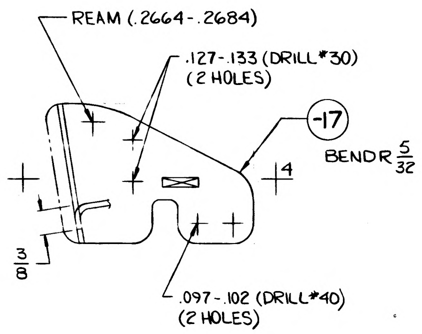
ENG 77.2 7-65

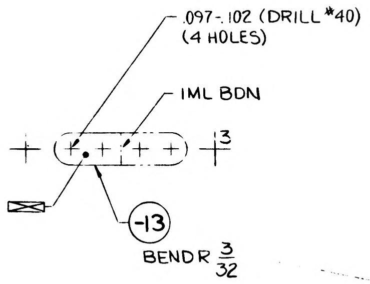
01

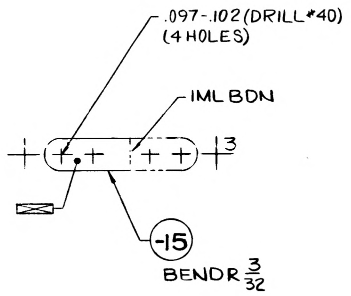
NAS 9-1100

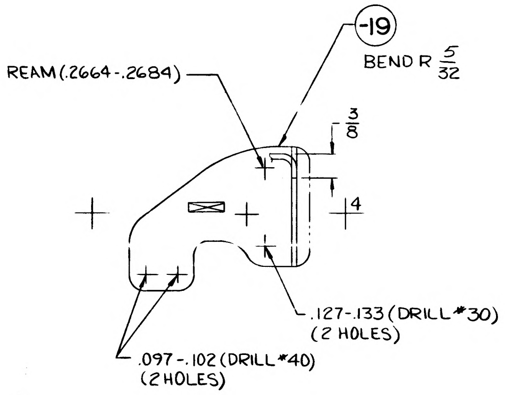
NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS (EXCEPT AS NOTED).


IML BUP
MAY BE USED FOR #30 MAX. SIZE TOOLING HOLES (3)
21/32
11
11/16
-11
BEND R 3/32
IML BUP
G-H11F-16 1 3/4 D BUP (2)


REAM (.2664-.2684)
.127-.133 (DRILL #30) (2 HOLES)
-17
BEND R 5/32
4
3/8
.097-.102 (DRILL #40) (2 HOLES)


.097-.102 (DRILL #40) (4 HOLES)
IML BDN
3
-13
BEND R 3/32


.097-.102 (DRILL #40) (4 HOLES)
IML BDN
3
-15
BEND R 3/32


-19
BEND R 5/32
REAM (.2664-.2684)
3/8
4
.127-.133 (DRILL #30) (2 HOLES)
.097-.102 (DRILL #40) (2 HOLES)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL f DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	F	26512	LDW280-11117	A
	SCALE FULL		SHEET 3.00	

FOR PHOTO 1 REPRODUCTION

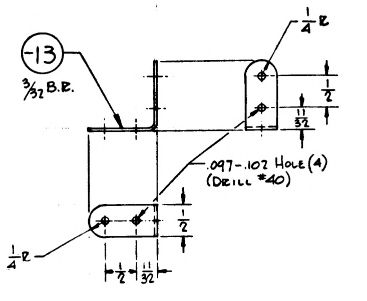
LDW280-11117 A

NAS 9-1100

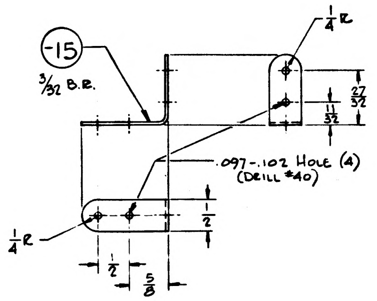
MANUFACTURING OPERATIONS	
NOTES CHECKED ✓ APPLY TO THIS DWG.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.	
200√ FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ∫ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	

REVISIONS

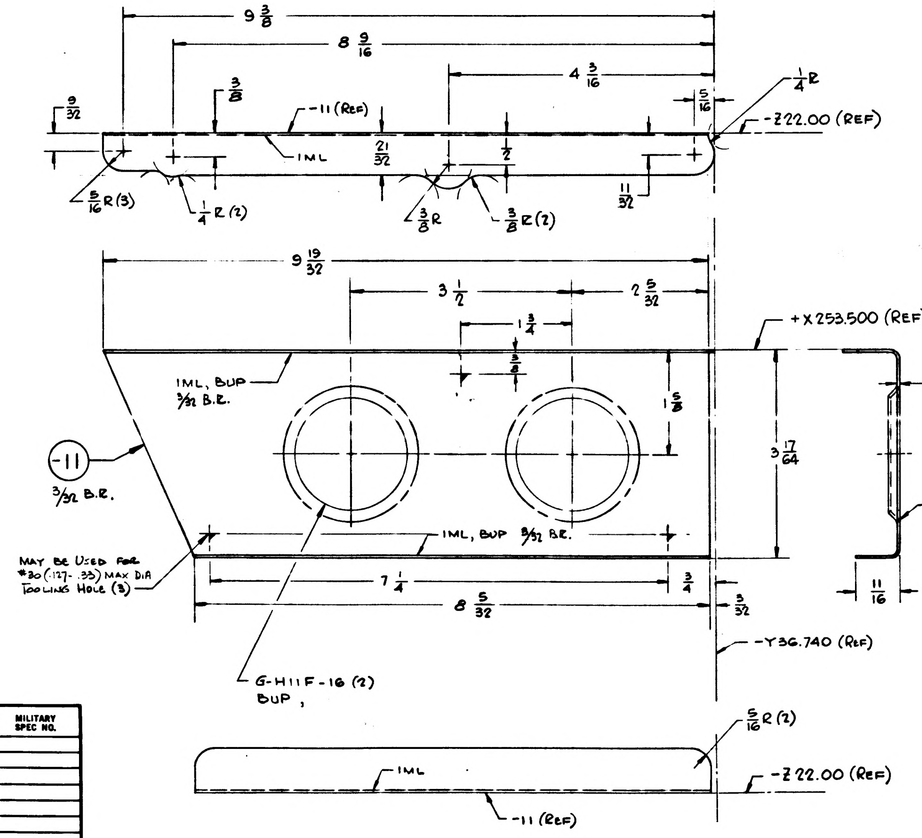
REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY / DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MODULE NUMBER	DISPOSITION OF EXIST PARTS: REWORK	SCRAP	ENGRG APPD	GOVT APPD



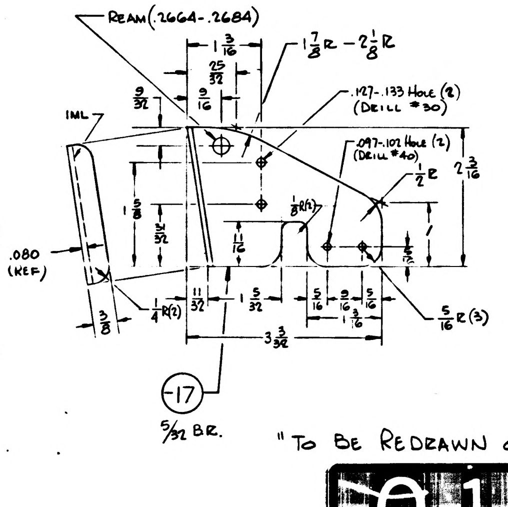
-13
3/32 B.R.
1/4 R
1/2
11/32
.097-.102 Hole (4)
(Drill #40)
1/2
1/4 R
1/2
11/32



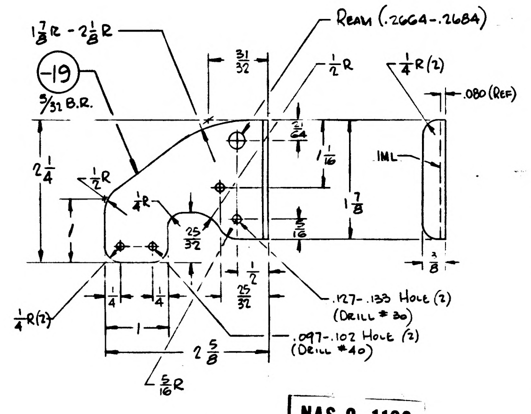
-15
3/32 B.R.
1/4 R
27/32
11/32
.097-.102 Hole (4)
(Drill #40)
1/2
1/4 R
1/2
5/8



9 3/8
8 9/16
4 3/16
3/8
1/4 R
5/16
9/32
-11 (REF)
-Z 22.00 (REF)
IML
21/32
1/2
11/32
5/16 R (3)
1/4 R (2)
3/8 R
3/8 R (2)
9 19/32
3 1/2
2 5/32
1 3/4
3/8
+X 253.500 (REF)
IML, BUP 3/32 B.R.
1 3/8
.040 (REF)
3 17/64
-11
3/32 B.R.
-11 (REF)
May be used for #30 (.127-.133) max dia tooling hole (3)
IML, BUP 3/32 B.R.
7 1/4
3/4
8 5/32
3/32
11/16
Const.
-Y 36.740 (REF)
G-H11F-16 (2) BUP
5/16 R (2)
IML
-Z 22.00 (REF)
-11 (REF)



Ream (.2664-.2684)
1 3/16
25/32
1 7/8 R - 2 1/8 R
9/32
9/16
IML
.127-.133 Hole (2)
(Drill #30)
.097-.102 Hole (2)
(Drill #40)
1/2 R
2 3/16
1 5/8
31/32
11/16
1/8 R (2)
5/16
.080 (REF)
1/4 R (2)
3/8
11/32
1 5/32
5/16
9/16
5/16
1 3/16
5/16 R (3)
3 3/32
-17
5/32 B.R.



1 7/8 R - 2 1/8 R
Ream (.2664-.2684)
-19
5/32 B.R.
31/32
1/2 R
1/4 R (2)
.080 (REF)
21/64
1 1/16
IML
2 1/4
1/2 R
1/4 R
1 7/8
25/32
5/16
3/8
1/4
1/4
1/2
25/32
1/4 R (2)
1
.127-.133 Hole (2)
(Drill #30)
.097-.102 Hole (2)
(Drill #40)
2 5/8
5/16 R

"To Be Redrawn on Production Format"

NAS 9-1100

01

QTY REQ'D PER ASSY			PART OR IDENTIFYING NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE
			LDW 280-11117-19	E		CLIP	AL ALLOY SH	QQ-A-283	7075	.080 × 2 1/2 × 3 1/4	T6	88		
			LDW 280-11117-17			CLIP	AL ALLOY SH	QQ-A-283	7075	.080 × 2 3/8 × 3 1/2	T6	88		
			LDW 280-11117-15			CLIP	AL ALLOY SH	QQ-A-283	7075	.040 × 9/16 × 2 1/2	T6	88		
			LDW 280-11117-13			CLIP	AL ALLOY SH	QQ-A-283	7075	.040 × 9/16 × 2 1/4	T6	88		
			LDW 280-11117-11	E		CHANNEL	AL ALLOY SH	QQ-A-283	7075	.040 × 5 × 10	T6	88		

3

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	LSP 14-9030	

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
T6	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

ENG. 000 0-60

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE	MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE	MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
								LEM	LDW 280-23029	LEM-6 (36)	1 EA.
								LEM	LDW 280-23029	LEM-5 (35)	1 EA.
								LEM	LDW 280-23029	LEM-4 (34)	1 EA.
				LEM	LDW 280-53476	LEM-6 (36)	1 EA	LEM	LDW 280-23029	LEM-3 (33)	1 EA
				LEM	LDW 280-53476	LEM-5 (35)	1 EA	LEM	LDW 280-23029	LTA-3 (13)	1 EA.
				LEM	LDW 280-53476	LEM-4 (34)	1 EA	LEM	LDW 280-28029	LEM-2 (32)	1 EA.
				LEM	LDW 280-53476	LEM-3 (33)	1 EA	LEM	LDW 280-28029	LTA-8 (18), LEM-1 (31)	1 EA
PART NO.		GRUMMAN SCH INFO		PART NO.	LDW 280-11117-11, -13, -15	GRUMMAN SCH INFO 32-2		PART NO.	LDW 280-11117-17, -19	GRUMMAN SCH INFO 32-5	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ± 1/32 ± .020 ± 0°30'	DRAWN BY	Rocklein	4/27
	CHECKED BY		
	LAYOUT BY	Rocklein	4/
	Group Ldr		5/
	Veh. Des Int.		
ORIG DWG AUTH	Structures		5/9
DETAIL SPEC REQUIREMENT	Structures		5/9
CLASS II ENGRG CHANGE	Weights		5/11
CLASS I ENGRG CHANGE	Reliability		
GRUMMAN REL INFO	Project Engr		5-11
PRIM. NO. LE001 215	Release		5-11-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

CHANNEL - ASCENT STAGE,
MID SECTION, +X 253.5 DECK

CONTRACT NO. NAS 9-1100 DOCUMENTATION TYPE II

CODE IDENT NO.	SIZE	
26512	F	LDW 280-11117
SCALE: FULL	LINE ITEM # 1	SHEET 1 OF 1

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 526
CONTROL INFO NO. LDW280 A5914

TO THE FOLLOWING DRAWINGS LISTED BELOW & THEIR DASH NUMBERS * THAT ARE EFFECTIVE ON LM-6(36) ADD EFFECTIVITIES FOR LM-7(37) LM-8(38), LM-9(39) LM-10(40) LM-11(41), LM-12(42), LM-13(43), LM-14(44), LM-15(45). QUANTITIES & N/A REMAIN THE SAME AS LM-6(36.)

DRAWING No.	DASH NO *	CHG NO.	TITLE	NEXT ASSY
LDW280-10245	-17, -19	C4	ANGLE CAB. L.H WIND	LDW280-23074
-10261	-13,-15,-17,-19,-20	C1	CHAN M/S BEAM	-54030
-10300	-13, -15	D2	CLIP RH ZO FRM LWR	-54020
-10310	-15	D1	CHAN CAB. WIND AREA	-23074
-10380	-15	C1	SHIM FWD HATCH HINGE	-54083
-10561	-11	A1	WEB M/S ENG SPT. FWD	-23077
-10702	-17	A1	DBLR DOCK TUN.	-23069
-10830	ULTRA SONIC STD. PANELS	B1	FAB. PROC-ECS-HE MOD	H23143
-10833	-11, -13, -15	B2	WEB ECS HEAT EXC SPT	-23253
-10904	-11, -13, -17	C3	SUPT IMU BEAM WIRING	-23031
-23168	-1, -3, -5 & -7	A2	HATCH ASSY DOCK TUNNEL	-23069
M23139	-1	B1	VEE ASSY CAB NVP -LAP	-23066
-11066	-11, -12	A1	CLIP S BAND ANTENNA	-23246
-11110	-11	C1	FTG AEB CAGE STRUT	-23039
-11117	-17, -19	B1	CHANNEL X253 DECK	-23029
-11117	-11, -13 & -15		CHANNEL X253 DECK	-53476
-11159	-15, -17, -18	B2	ZEE SHIELD X253.5	-53476
-11191	-11	C1	SUPT F.F. EQUIP LINES	-54075
-11351	-1 & -3	B2	BRACKET ASSY	-23488
-53078	-1	A7	BEAM INSTL MS 210.25	-54012
H23903	-5	C4	SKIRT ASSY OXID	LDW280-23901
M10555	-1, -2	A1	CLIP LONGERON CABIN	-23048
-28753	-1	A4	SKIN ASSY DS SC	-28750
-23066	-1	B4	FR IN CAB NA BAS SUP	-54002
-23511	NONE	B3	JIG DATA - REF DWG.	NONE
M11108	-1	B1	BOLT ZO R.H SHIELD SUPT	-51199
-25709	-1	A2	SHIELD INSTL DS EQ	-25661
-28362	-3	A2	STRAP ASSY CABIN	-54357
-28645	-3	A2	ACCESS COV INST PLSS	-54553

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐	3

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
ADDITIONAL REQUIREMENTS	FOR DASH * ADDED LM-7(37) THRU LM-15(45) EFF.	Ⓡ JK 3/27/67

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-7(37) THRU	LM-15(45)

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY	
REVISE DWG	RECORD EO	REWORK	SCRAP	DATE	3/16/67
✓		NO REQD		6	VDI

SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
		—	3/20		3-23-67	3/24/67

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	NOTED	LEO 280	526

ISSUED BY A. MAICA X1392 SECTION VEH. DES. INTRE GROUP NO. 335 PL 35

01

NAS 9-1100

LDW280-11118

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53332	LEM-3(33)	1 EA
PART NO. LDW280-11118-11$-13		GAEC SCH NO. 31-2	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	~	GRUMMAN RELᶜ INFO			
		PRIM NO.	41001		
LAST DASH NO. USED	-13	215	MP17		18 S.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.010 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM NO1 | DOCUMENTATION TYPE I

DRAWN BY	F. CURASI 4-12-66	RELIABILITY	
LAYOUT BY	~		
CHECKED BY ENG			
GR. LDR.	J. Cavatore 4/14		
VEN DES INT	W.R. Burkhoff 4/14		
STRUCT	FD BW 4/21	PROJ ENGR	J. Ellerhorst 5-2-66
STRUCT	Hildermann 4/21	REL GROUP	Botte 5-4-66
WEIGHTS	Shobesch JSV 4-29		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DOUBLER
A/S-CABIN-CANTED FRAME-
VIBRATION AMPLIFIER

SIZE B | CODE IDENT NO. 26512 | LDW280-11118
SCALE NONE | SHEET 1.00 OF 3.00

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11118-13	E	DOUBLER	AL. ALLOY SHT.	QQ-A-283	7075	.032x3¾x9	T6	88	
								LDW280-11118-11	E	DOUBLER	AL. ALLOY SHT.	QQ-A-283	7075	.032x6½x9	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T6	AL. HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

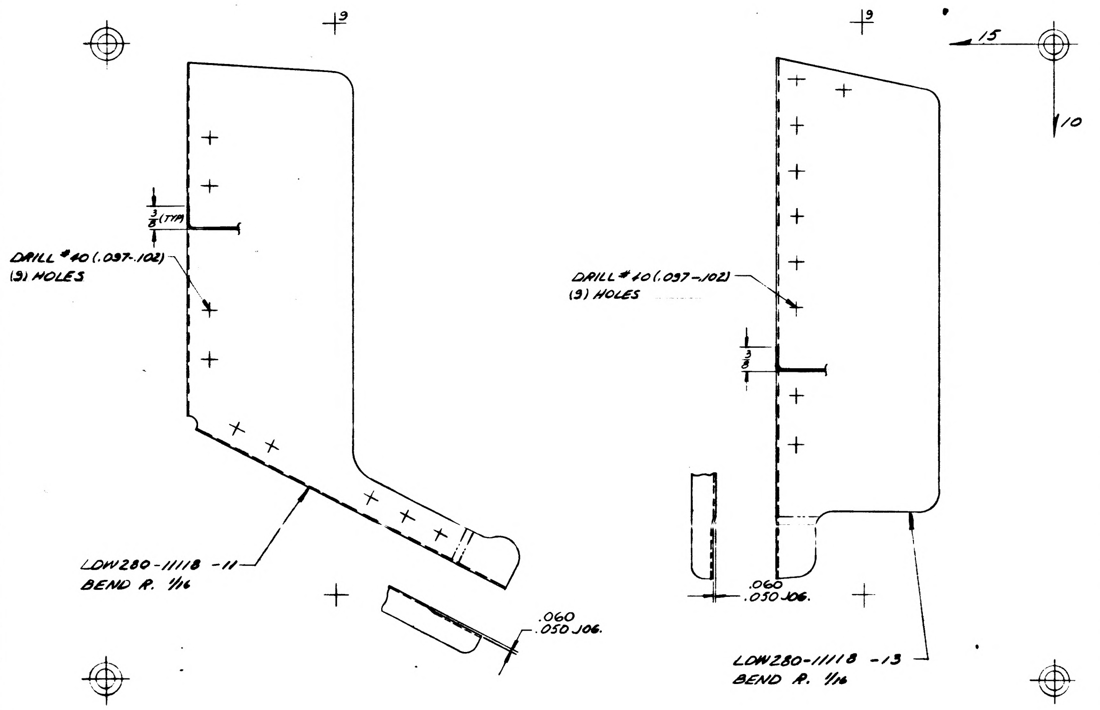
SIZE B
CODE IDENT NO. 26512
LDW280-11118

SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



TO BE REDRAWN ON PRODUCTION FORMAT

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

LEM	SIZE C	CODE IDENT NO. 26512	LDW280-11118	
MODEL OR END ITEM	SCALE FULL			SHEET 3.00

FOR PHOTO REPRODUCTION

LDW280-11118

01

NAS 9-1100

LDW280-11119 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23270	LEM-6(36)	1
		LEM-5(35)	1
		LEM-4(34)	1
		LEM-3(33)	1
		LTA-3(13)	1
		LEM-2(32)	1
		LEM-1(31)	1
LEM	LDW280-23270	LTA-8(16)	1
PART NO. LDW280-11119-11		GAEC SCH NO. 32-2	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO			
LAST DASH NO. USED	-11	PRIM NO.	VE/001		
		215	MP/2A		J.R. 5-3

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.010 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM NO 1 | DOCUMENTATION TYPE II

DRAWN BY	OCONNELL 4-28-66	RELIABILITY	
LAYOUT BY	TORRACO		
CHECKED BY	J.S. 4-29-66		
GROUP LDR	W. Phillips 5/3/66		
VEH.DES.INT.	W.L. BISCHOFF		
STRUCTURES	5/3	PROJ ENGR	J. Albright 5-4
STRUCTURES	Hilderman 5/3	REL GROUP	Botts 5-6-66
WEIGHTS	5-4		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP
ASCENT STAGE - MID SECTION - SLA/
LEM UMBILICAL SWITCH

SIZE	CODE IDENT NO.		
B	26512	LDW280-11119	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	SH CHG LTR	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
												REWORK	SCRAP			
A	1			☒					EO A1	EO A1 INITIAL RELEASE - PARTS MADE PER EO JS	NOTED	NOT REQD		OCONNELL 4-21-66	[illegible]	[illegible] 5-[illegible]-66

FOR CONTINUATION OF REVISIONS SEE SHEET

ENG 77.3 5-64

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11119	A

SCALE NONE

SHEET 1 TO

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11119-11	E	CLIP	AL. ALLOY EXTR	QQ-A-267	2024-T3511	DIE *9802 × 3 1/8	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-11119
A
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

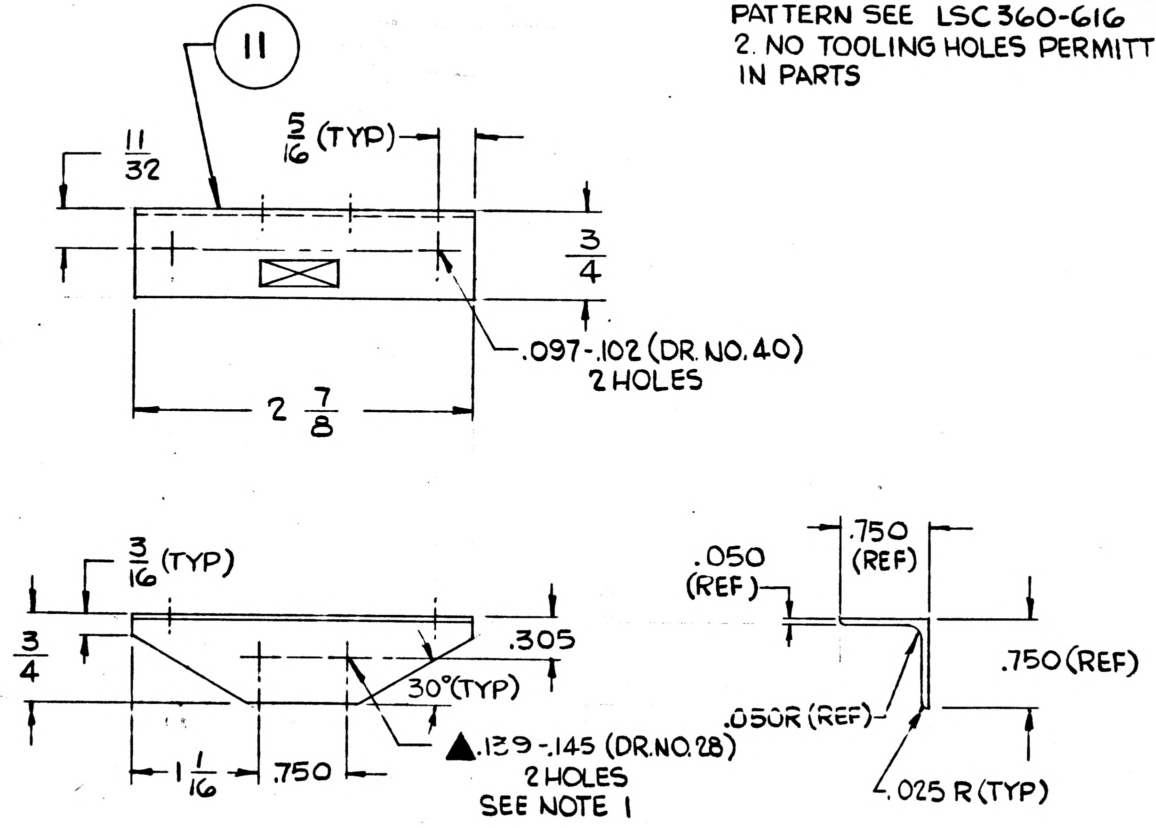
01

NAS 9-1100

NOTES
1. FOR CORRESPONDING HOLE PATTERN SEE LSC360-616
2. NO TOOLING HOLES PERMITTED IN PARTS

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CK'D. ✓ APPLY TO DWG

RUBBER STAMP PT. NO. IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY	✓



11
11/32
5/16 (TYP)
3/4
.097-.102 (DR. NO. 40)
2 HOLES
2 7/8
3/16 (TYP)
3/4
.305
30° (TYP)
▲.139-.145 (DR. NO. 28)
2 HOLES
SEE NOTE 1
1 1/16
.750
.050 (REF)
.750 (REF)
.750 (REF)
.050R (REF)
.025 R (TYP)

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11119	A
SCALE FULL		SHEET 3.00	

ENG 73.1 6-64

01

NAS 9-1100

24 *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280 EO NO. 296
CONTROL INFO NO. LDW280 A 0658

ENG 20.2 REV 3-63

* TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9 (39), LEM-10(40), LEM-11(41), LEM-12 (42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10981	A1	SEE DRAWING
-11015	B1	
-11025	B1	
-11023	B4	
-11035	A2	
-11036	B1	
-11039	A1	
-11045	A1	
-11048	B1	
-11050	C1	
P11055	B2	
P11056	C2	
-11067	B1	
-11068	B1	
H11069	B1	
-11070	C1	
-11071	A1	
-11072	A1	
-11073	A2	
P11087	B1	
-11103	A1	
-11116	A1	
-11119	B1	
-11123	A2	
-11128	C1	
-11149	A1	
-11153	A1	
-11154	A2	
-11155	A1	
-11156	B1	
-11157	B2	
LDW280-11160	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ	☐	CL II ENGRG CHG ☐	CL I ENGRG CHG ☐

REASON FOR EO	DESCRIPTION OF EO
ADDITIONAL REQUIREMENTS	FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE: E 10.8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM-9(39)
LEM		LEM-10(40) LEM-11(41)	LEM-12 (42)
LEM		LEM-13(43) LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG ✓	RECORD EO	REWORK: NOT REQ'D	SCRAP

APPROVED BY								
DATE	9/23/66				9.19		10-6-66	10-3-66
	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LE0280
EO NO.: 296

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL. 35

01
NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

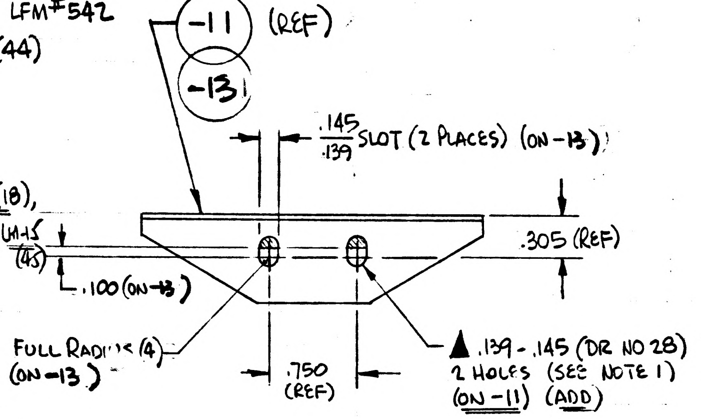
DWG. NO. LDW 280-11119 | EO NO. B2
CONTROL INFO NO. LDW 280B-9604

CREATE -13, SIMILAR TO -11 EXCEPT AS SHOWN:

(-13 TO BE REWORKED FROM -11 BY SLOTTING EXISTING HOLES)
EFFECTIVITY OF -13: LM-7(37) & LM-8(38) LFM#542
LM-9(39) THRU LM-14(44)
NEXT ASSEMBLY: LDW 280-23270
QTY REQ'D: 1 REQ'D/VEH.

RESTRICT EFFECTIVITY OF -11 TO LTA-8(18), LTA-3(13) AND LM-1(31) THRU LM-8(38) & LM-15 (45)

(EFFECTIVITY WAS LTA-8(18), LTA-3(13), AND LM-1(31) THRU LM-15(45).)



-11 (REF)
-13
.145/.139 SLOT (2 PLACES) (ON -13)
.305 (REF)
.100 (ON -13)
FULL RADIUS (4) (ON -13)
.750 (REF)
▲ .139 - .145 (DR NO 28) 2 HOLES (SEE NOTE 1) (ON -11) (ADD)

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCO# 5379 PKG# 10

REASON FOR EO: TO PROVIDE ADJUSTABLE SWITCH BRACKET WR 12/23

DESCRIPTION OF EO: CREATED -13. RESTRICTED EFFECTIVITY OF -11 TO LTA-8(18), LTA-3(13) AND LM-1(31) THRU LM-8(38) BY REMOVING LM-9(39) THRU LM-14(44) EFF.

GAEC EO RELEASE (5) JK 12/29/69

MODEL	~~PROCURING ACTIVITY NO.~~ E1	GAEC UNIT NO.	~~SUB CONTR UNIT NO.~~
LM		LM-9(39) THRU LM-14(44)	
LM	LFM#542	LM-7(37) &	LM-8(38)

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY					CW			
DATE	12-23-69			12/23/69	12/23/69		12-23-69	12/29/69

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	CLIP- A/S, M/S, SLA/LEM UMBILICAL SWITCH.	LDW 280-11119	B2

12/23/69
ISSUED BY GEO. W. ROCKLEIN x86048 12/23/69 SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11120 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28293	LEM-2(32)	1 EA
LEM	LDW280-28293	LEM-1 (31)	1 EA
LEM	LDW280-28293	LTA-8 (18)	1 EA
PART NO. LDW280-11120-21, -23,-25,-26,-27,-28 & -29		GAEC SCH NO. 325	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFOR			
LAST DASH NO. USED	-29	PRIM NO.	LE(001)		
		215	MP12		R5 420

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.010 ±1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100
LINE ITEM * 1
DOCUMENTATION TYPE II

DRAWN BY	R.D.MARCO-4-18-66	RELIABILITY	
LAYOUT BY	R.D.MARCO-4-18-66		
CHECKED BY			
GROUP LEADER	W.TRAUT-4-18-66		
VEH.DES.INT	PAULSRUD-4-18-66		
STRUCTURES	FEB FOR HILDERMAN 4-19-66	PROJ ENGR	J.ALBER 4-21
STRUCTURES		REL GROUP	A.CARAMANICA-4-25-66
WEIGHTS	D.ROBESCH-4-21-66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT
ASCENT STAGE CABIN +Z 27.00
BULKHEAD PIPING

SIZE	CODE IDENT NO.		
B	26512	LDW280-11120	A
SCALE	NONE	SHEET 1.00 OF 4	

SUPERSEDES LDW280-11120 NO CHANGE 7-13-66

0 1

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
RETRACED NO CHANGE LAST REVISION NO CHANGE ADDED SHEET 1.00, 1.10 & 2.00. SHEET 1.00 OF 4 (WAS) 1 OF 1. P CARSTENSEN										7-13-66					
A	1							EO A1 (P)	CREATED -21, -23, -25, -26, -27, -28 & -29 SCRAP -11, -13, -15, -16, -17, -18 & -19 ES	LTA-8 LEM-1 & -2		-11, -13-15, -16 -17, -18 & -19	CARSTENSEN 7-13-66		

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY	PROJ. ENGR	REL. GROUP			
	A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11120	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11120-29	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.032 × 2 3/8 × 2 3/8	NONE	88	
		-28				QQ-A-250/4	2024	.040 × 1 3/4 × 2 3/8	T3/T42	88	
		-27				QQ-A-250/4	2024	.040 × 1 3/4 × 2 3/8	T3/T42	88	
		-26				QQ-A-250/4	2024-T3	.032 × 3 × 3 3/8	NONE	88	
		-25				QQ-A-250/4	2024-T3	.032 × 3 × 3 3/8	NONE	88	
		-23				QQ-A-250/4	2024-T3	.032 × 3 × 12 3/4	NONE	88	
		LDW280-11120-21	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.032 × 3 × 11 3/4	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T42	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LPS-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

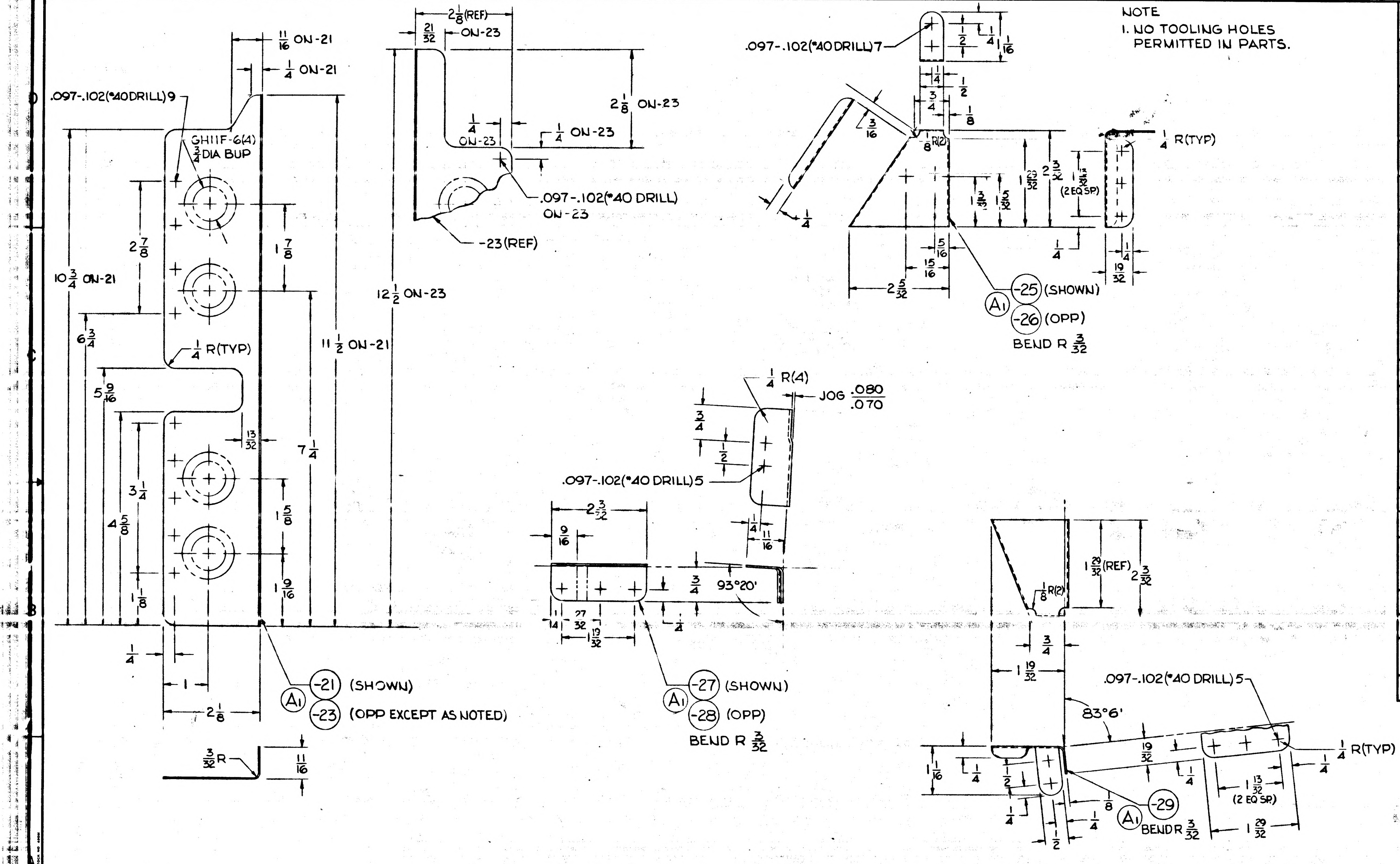
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11120	A
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


8
7
6
5
4
3
2
1
D
C
B
A
11/16 ON-21
1/4 ON-21
.097-.102(#40 DRILL)9
GH11F-6(4)
3/4 DIA BUP
2 7/8
1 7/8
10 3/4 ON-21
6 3/4
1/4 R(TYP)
5 9/16
13/32
7 1/4
11 1/2 ON-21
3 1/4
4 5/8
1 5/8
1 9/16
1 1/8
1/4
1
2 1/8
Ⓐ1 -21 (SHOWN)
-23 (OPP EXCEPT AS NOTED)
3/32 R
11/16
2 1/8 (REF)
21/32 ON-23
2 1/8 ON-23
1/4 ON-23
1/4 ON-23
.097-.102(#40 DRILL) ON-23
-23(REF)
12 1/2 ON-23
1/4 R(4)
JOG .080/.070
3/4
1/2
.097-.102(#40 DRILL)5
2 3/32
9/16
1/4
11/16
3/4
93°20'
14
27/32
1 13/32
Ⓐ1 -27 (SHOWN)
-28 (OPP)
BEND R 3/32
.097-.102(#40 DRILL)7
1/2
1/4
1/16
3/4
1/2
1/8
3/16
R(2)
1 23/32
2 3/32
1 3/32
1 15/32
1 3/32 (2 EQ SP)
1/4 R(TYP)
1/4
5/16
15/16
2 5/32
1/4
19/32
Ⓐ1 -25 (SHOWN)
-26 (OPP)
BEND R 3/32
1 29/32 (REF)
2 3/32
1/8 R(2)
3/4
1 19/32
.097-.102(#40 DRILL)5
83°6'
19/32
1/4 R(TYP)
1/4
1 1/16
1/4
1/2
1/4
1/8
1/4
1/2
13/32 (2 EQ SP)
1 29/32
Ⓐ1 -29
BEND R 3/32

NOTE
1. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
LEM	SIZE D	CODE IDENT NO. 26512	LDW280-11120	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

NAS 9-1100

LDW280-11121 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28293	LEM-2 (32)	2
LEM	LDW280-28293	LEM-1 (31)	2
LEM	LDW280-28293	LTA-8 (18)	2
PART NO. LDW280-11121-21		GAEC SCH NO. 325	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28293	LEM-2 (32)	1 EA
LEM	LDW280-28293	LEM-1 (31)	1 EA
LEM	LDW280-28293	LTA-8 (18)	1 EA
PART NO. LDW280-11120-17 & -19		GAEC SCH NO. 325	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A		
LAST DASH NO. USED	-21	PRIM NO.	LE(001)	
		215	mp-A	8-4-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.010 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	R.D.MARCO 4-18-66	RELIABILITY	
LAYOUT BY	R.D.MARCO 4-18-66		
CHECKED BY			
GROUP LEADER	W. TRAUT 4-18-66		
VEH DES INT	PAULSRUD 4-18-66		
STRUCTURES	FEB FOR HILDERMAN 4-19-66	PROJ ENGR	J. ALBER 4-21
STRUCTURES		REL GROUP	L. CARAMANICA 4-25-66
WEIGHTS	D. ROBESCH 4-21-66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT
ASCENT STAGE CABIN +Z27.00
BULKHEAD PIPING

SIZE B
CODE IDENT NO. 26512
LDW280-11121 A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11121 NO CHANGE 7-12-66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
RETRACED NO CHANGE LAST REVISION NO CHANGE ADDED SHEET 1.00, 1.10 & 2.00, SHEET 1.00 OF 4 (WAS) 1 OF 1 P. CARSTENSEN 7-12-66														WT 8/1/66 RMC	
A	1							EO A1	CREATED -17, -19 & -21. SCRAP -11, -13 & -15	LTA-8, LEM-1 & -2		-11-13&-15	CARSTENSEN 7-12-66	B.I	

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY	PROJ ENG	REL GROUP			
	A	~	WT 8/1/66									

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11121	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11121-21	E	PLATE	AL ALLOY SH	QQ-A-250/12	7075-T6	.080 x 3/4 x 1 5/8	NONE	88	
		LDW280-11121-19	E	CLIP	AL ALLOY SH	QQ-A-250/4	2024-T3	.032 x 1 x 3	NONE	88	
		LDW280-11121-17	E	SUPPORT	AL ALLOY SH	QQ-A-250/4	2024-T3	.032 x 2 5/8 x 3	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-11121
A
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

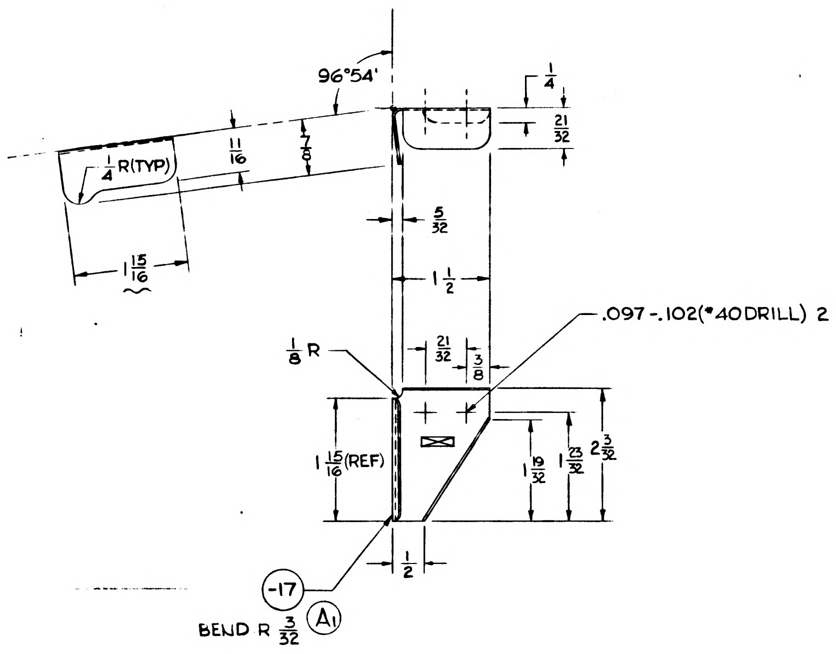
01

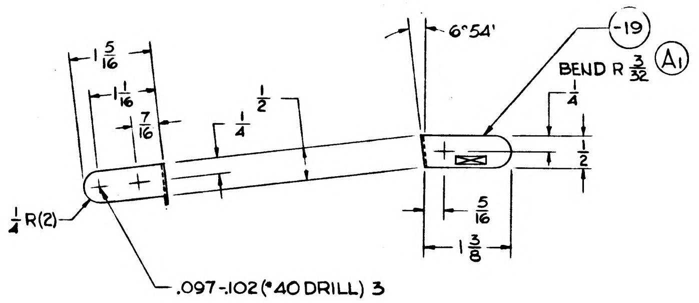
NAS 9-1100

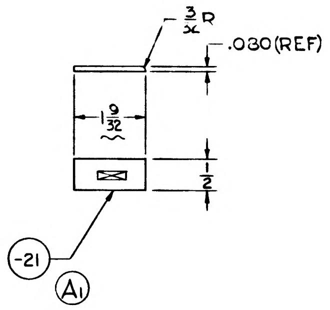
LDW280-11121 A

NOTE

1. NO TOOLING HOLES PERMITTED IN PARTS.


96°54'
1/4
21/32
11/16
7/8
1/4 R(TYP)
1 15/16
5/32
1 1/2
.097-.102(#40 DRILL) 2
1/8 R
21/32
3/8
1 15/16(REF)
1 19/32
1 23/32
2 3/32
1/2
-17
BEND R 3/32
A1


1 5/16
1 1/16
7/16
1/4
1/2
6°54'
-19
BEND R 3/32
A1
1/4
1/2
5/16
1 3/8
1/4 R(2)
.097-.102(#40 DRILL) 3


3/32 R
.030(REF)
1 9/32
1/2
-21
A1

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ✓ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

LDW280-11121 A

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-11121	A
	SCALE FULL & NOTED		SHEET 3.00	

01 NAS 9-1100

								LDW280-11122-19	E	CLIP	AL ALLOY SH	2024-T3	QQ-A-250/4	.040 X 1 X 3	NONE	88	
								↕ -17	↕	CLIP	↕	↕	↕	.040 X 1 X 3 1/4	NONE	88	
								↕ -15	↕	CLIP	↕	↕	↕	.040 X 1 1/16 X 2 3/8	NONE	88	
								↕ -13	↕	CHANNEL	↕	↕	↕	.040 X 29/32 X 4	NONE	88	
								LDW280-11122-11	E	BRACKET	AL ALLOY SH	2024-T3	QQ-A-250/4	.040 X 3 7/8 X 3 3/8	NONE	88	
QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

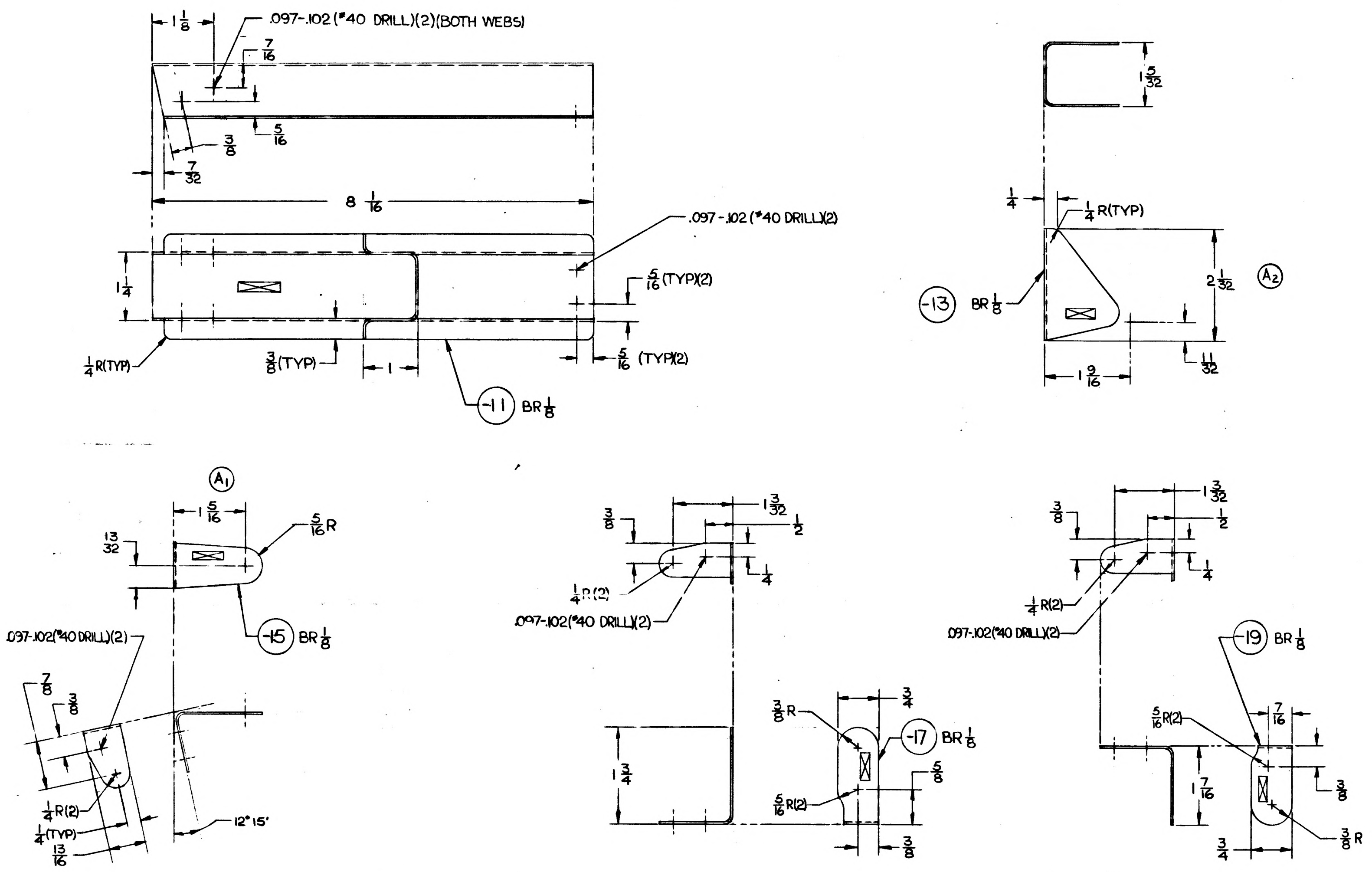
SIZE	CODE IDENT NO.		
B	26512	LDW280-11122	A
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.



1 1/8
.097-.102 (#40 DRILL)(2)(BOTH WEBS)
7/16
5/16
3/8
7/32
8 1/16
.097-.102 (#40 DRILL)(2)
1 1/4
5/16 (TYP)(2)
5/16 (TYP)(2)
1/4 R(TYP)
3/8 (TYP)
1
-11 BR 1/8
1 5/32
1/4
1/4 R(TYP)
-13 BR 1/8
2 1/32
A2
1 9/16
11/32
A1
1 5/16
5/16 R
13/32
-15 BR 1/8
.097-.102(#40 DRILL)(2)
7/8
3/8
1/4 R(2)
1/4 (TYP)
13/16
12° 15'
3/8
1 3/32
1/2
1/4
1/4 R(2)
.097-.102(#40 DRILL)(2)
1 3/4
3/8 R
3/4
-17 BR 1/8
5/8
5/16 R(2)
3/8
3/8
1 3/32
1/2
1/4
1/4 R(2)
.097-.102(#40 DRILL)(2)
-19 BR 1/8
5/16 R(2)
7/16
1 7/16
3/8
3/4
3/8 R

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
LEM	SIZE D	CODE IDENT NO. 26512	LDW280-11122	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

LDW280-11122 A

01

NAS 9-1100

LDW280-11122 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28344	LEM-15(45)	1EA
		LEM-14(44)	1EA
		LEM-13(43)	1EA
		LEM-12(42)	1EA
		LEM-11(41)	1EA
		LEM-10(40)	1EA
		LEM-9(39)	1EA
		LEM-8(38)	1EA
		LEM-7(37)	1EA
		LEM-6(36)	1EA
		LEM-5(35)	1EA
		LEM-4(34)	1EA
		LEM-3(33)	1EA
LEM	LDW280-28344	LTA-8(18)	1EA
LEM	LDW280-28344	LEM-2(32)	1EA
LEM	LDW280-28344	LEM-1 (31)	1EA
PART NO. LDW280-11122-11,-13,-15,-17 &-19		GAEC SCH NO. 32-5	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -19

GRUMMAN REL INFO C B

PRIM NO.	LE(001)		
215	MP 12		R5 421

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY	HARRIGAN 4-19	RELIABILITY	
LAYOUT BY			
CHECKED BY JG(A)			
GR.LEADER	TRAUT 4-20-66		
VEH.DES. INT.	BISCHOFF 4-21-66		
STRUCTURE	HILDERMAN B.W. 4-22	PROJ ENGR	ALBERT R.C. 4-25
STRUCTURE		REL GROUP	BOTTI 4-26-66
WEIGHTS	MANDRAS 4-23		

Ⓡ GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE ~ MID SECTION
ENGINE DRAIN LINES

SIZE B | CODE IDENT NO. 26512 | LDW280-11122 | B

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11122 "NO CHG" 4-19-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHG LAST REV NO CHG SH I OF 4 WAS I OF I		HIPPLER 6-16-66				
A	1	1.00,1.10,3.00	B-8					EOA1	-15 CLIP DIM 1 5/16 WAS 3/4	LEM-1,-2,LTA-8	NOT	REQD	HIPPLER 6-17-66		
	2	1.00,1.10,3.00	C-3					EOA2	IN FLD FOR -13 2 1/32 WAS 2 9/32	LEM-1,-2,LTA-8	NOT	REQD			
B	1	1.00,1.10						EOB1	ON -11,-13,-15,-17 & -19 ADDED EFFECTIVITY LEM-3 THRU LEM-15	LEM-3 THRU LEM-15	NOT	REQD	G.WRIGHT 9-14-66 RS		

CHG APPROVED

LTR	GROUP LDR	VEH.DES.INT.	STRUCTURE	STRUCTURE	WEIGHTS	RELIABILITY					
A											
E											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11122	B
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

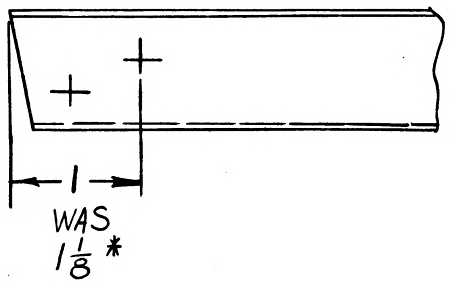
NAS 9-1100

ENG 32.1 REV 3-65

*

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11122	EO NO. C1
CONTROL INFO NO. LM-3-3846	



* IF HOLES DRILLED TO 1 1/8 DIM. FLUSH PLUG BOTH SIDES WITH NAS1097AD RIVET

LDW 280-11122-11

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		3

REASON FOR EO: INSUFFICIENT EDGE DISTANCE ON N/A LDW280-28344

DESCRIPTION OF EO: IN FIELD FOR-11
1 WAS $1\frac{1}{8}$

GAEC C EO RELEASE: ⓔ

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LTA-8(18)	
		LM-1(31) THRU-15(45)	

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
✓		✓	

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY	RP			—	BM			
DATE	10/12/66			—	10-4-66	10-4-66	10-6-66	10-4-66
10-4-66	V01							

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C3	BRACKET A/S M/S ENGINE DRAIN LINES	LDW280-11122	C1

ISSUED BY LIAISON / TARTAMELLA (X2151) VB SECTION VDI GROUP NO. 335 PL. 35

01 NAS 9-1100

ENG 32.1 REV 3-65

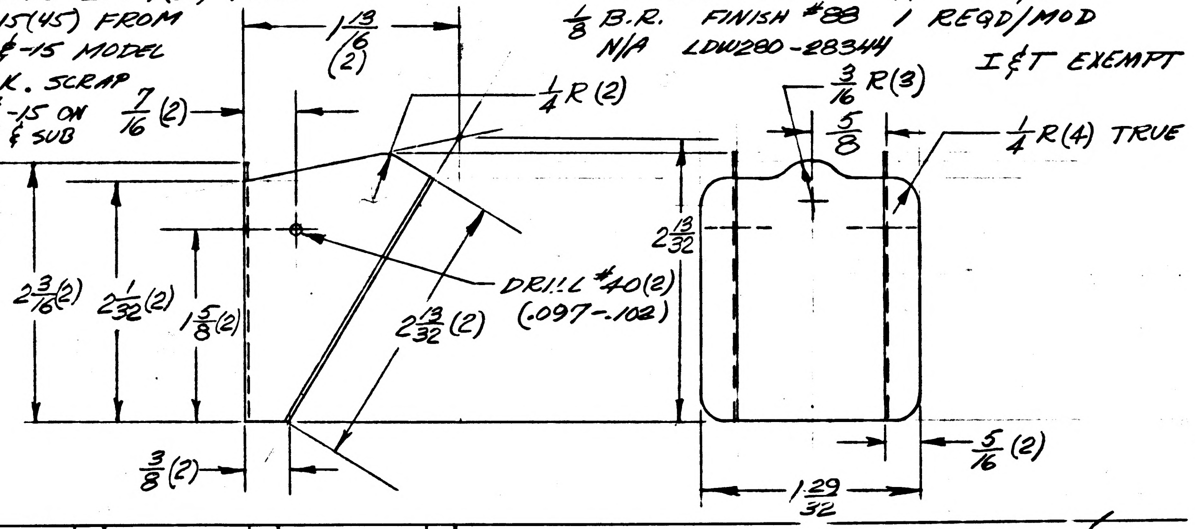
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW280-1122	EO NO. C2
CONTROL INFO NO. LM5-9469	

ADD -21 EFF LM-1(31) THRU LM-15(45)
REMOVE LM-1(31) THRU LM-15(45) FROM -13 & -15 MODEL BLOCK. SCRAP -13 & -15 ON LM-1 & SUB

ADD: LDW280-11122-21
.040 AL ALY 2024-T3 QQ-A-250/4
$\frac{1}{8}$ B.R. FINISH #88 1 REQD/MOD
N/A LDW280-28344
I&T EXEMPT



6

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO	DESCRIPTION OF EO	GAEC C EO RELEASE
TO ELIMINATE INTERFERENCE WITH LDW280-11486-11 (REF)	ADDED -21 REMOVED LM-1(31) THRU LM-15(45) FROM -13 & -15 MODEL BLOCK	Ⓡ K

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM-1(31) LM-15(45)	THRU

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
✓			-13 -15

APPROVED BY	WT				DK	CH	RMC	
DATE	10/29/66				10-29	10-29	11-1	10/31/66
10/28/66	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	BRACKET ASCENT MID-SECT ENGINE DRAIN LINES	LDW280-1122	C2

ISSUED BY K. BEACH/W. TRAUT X6454 SECTION VDI GROUP NO. 335 PL 5 EMF

01 NAS 9-1100

ENG 32.1 REV 3-66

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

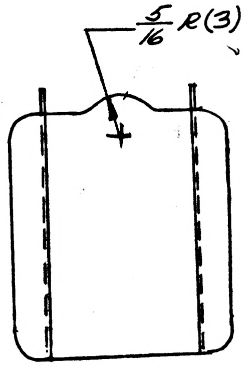
DWG. NO	LDW280-11122		EO NO C3
CONTROL INFO NO.	LM5-9482		

THIS IS A REV OF E.O. C2

CREATE -23 IDENTICAL TO -21
EXCEPT AS NOTED.
N/A LDW280-28344
1 REQD/MOD

REMOVE -21
THRU LM-15(45)

I&T EXEMPT



$\frac{5}{16}$ R(3) WAS $\frac{3}{16}$ R(3)

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☐	✓

REASON FOR EO	DESCRIPTION OF EO	Ⓡ GAEC C EO RELEASE
INCORRECT RADII CALLED OUT ON -21	REF E.O. C2 ADDED -23 REMOVED -21	ER

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-1(31)	
		THRU	
		LM-15(45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓			-21
REVISE DWG	RECORD EO	REWORK	SCRAP

APPROVED BY	WT				S.C.	CH	PMC	
DATE	11/1/66				11/1/66	11-1-66	11-3-66	11/4/66
I	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~[illegible]~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	BRACKET ASCENT MID-SECT ENGINE DRAIN LINES	LDW280-11122	C3

ISSUED BY K. BEACH/W. TRAUT 11/1/66 SECTION VDI X6454 GROUP NO. 335 PL 5 EMF

01 NAS 9-1100

C

ENG 32.1 REV 3-65

E.R.

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

*

DWG. NO. LEO280
EO NO. 692
CONTROL INFO NO. LDW280A 8853

ON THE FOLLOWING PARTS:
REMOVE LM3 THRU LM15 EFFECTIVITY

PART NO.	TITLE	NEXT ASSY	CHG NO.
LDW280-28344-1 * ✓	BRACKET INSTL: A/S, M/S ENGINE DRAIN LINES.	LDW280-53012 LDW280-54012	A8
LDW280-11122-11 * ✓ -17, -19 & -23	BRACKET - A/S, M/S ENGINE DRAIN LINES	LDW280-28344	C4

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 1422 ok

5

REASON FOR EO: NOT REQ'D DUE TO ENGINE ROTATION

DESCRIPTION OF EO: FOR * REMOVED LM3 THRU LM15 EFFECTIVITY.

(F) GAEC EO RELEASE: JK 8/25/67

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM 3(33) THRU LM15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK SCRAP ✓

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY				F.C.R.	BW		WRB	
DATE	8/22/67			8/22/67	8-23		8/23/67	8-24-67

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	NOTED	LEO 280	692

8/28
ISSUED BY SALVADOR X1033 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11123 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54020	LM-15 (45)	4
LM	↑	LM-14 (44)	4
LM		LM-13 (43)	4
LM		LM-12 (42)	4
LM		LM-11 (41)	4
LM		LM-10 (40)	4
LM		LM-9 (39)	4
LM	↓	LM-8 (38)	4
LM	LDW280-54020	LM-7 (37)	4
LM	LDW280-54020	LM-6 (36)	4
LM	LDW280-54020	LM-5 (35)	4
LM	LDW280-54020	LM-4 (34)	4
LM	LDW280-53020	LM-3 (33)	4
LM	LDW280-23020	[illegible]	4

PART NO. LDW280-11123-11

GAEC SCH NO. 32

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.

GAEC SCH NO.

WORK PKG FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -11

GRUMMAN REL INFO A

PRIM NO. 215 VC(001) MP-KA 4/15/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM
DOCUMENTATION TYPE II

DRAWN BY	LEVINE 4/1/68	RELIABILITY	
LAYOUT BY	KOSLOSKI 4/15/66		
CHECKED BY	D.FASS 4-6-68		
GP LEADER	B. PHILLIPS		
VEH DES INT	RP 4/19/66		
STRUCT	BM 4/15/66	PROJ ENGR	
STRUCT		REL GROUP	BOTTI 4/19/66
WEIGHTS			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

RADIUS BLOCK
ASCENT STAGE - MID SECT.

SIZE B
CODE IDENT NO. 26512
LDW280-11123 A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00, 1.10 2.00, 3.00						EOA1	EO A1 INITIAL DWG RELEASE PARTS MADE PER EO	LM-3 THRU LM-6 & LTA-3	NOT	REQD	LEVINE 4-1-68		
	2	1.00						LEO280-296	ON -11 ADDED LM-7 THRU LM-15	LM-7 THRU LM-15					
	3	1.00						Ⓑ	REF EO A1 N/A LDW280-55020 FOR LM-5 & LDW280-56020 FOR LM-6 SHOULD BE LDW280-54020 d.f.	LM-5(35) LM-6(36)					

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-11123	A
SCALE NONE			SHEET 1.10

ENG 77.3 5-66

01

NAS 9-1100

QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	LDW280-11123-11	E		RADIUS BLOCK	AL ALY SH	QQ-A-250/4	2024-T3	.125 × 1 × 1	NONE	76	

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC
						76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

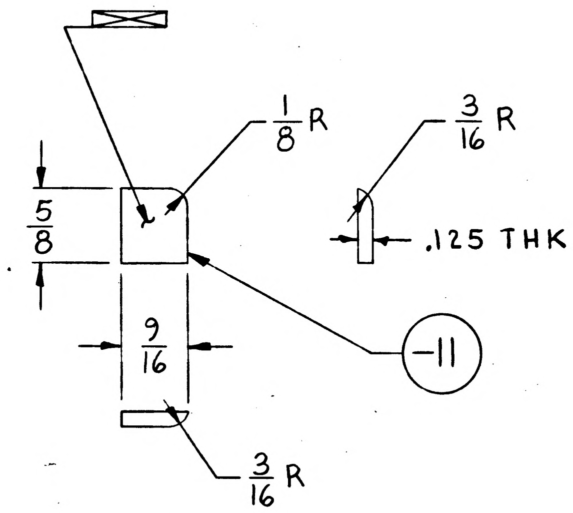
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-11123
A
SCALE NONE
SHEET 2.00

ENG 77.2 5-64

01

NAS 9-1100



MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒	✓	FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.		EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.		ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.			
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING		REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
		SYMBOL ✓ DENOTES SURFACE TO BE MACHINED	
		TOLERANCE ON FLANGES IS ± 1/32	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.		LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
125 ✓ SURFACE ROUGHNESS ~~INCLUDING REAMED HOLES~~ PER MIL-STD-10			
200 ✓ FOR ALL DRILLED HOLES			
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS			

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11123	A
SCALE FULL		SHEET 3.00	

ENG 73.11 12-64

01

NAS 9-1100

LDW280-11124 D

LFM

LM	LDW280-53096	LM-3(33)	1 EA
PART NO. LDW280-11124-39, -45, -49 & -50		GAEC SCH NO. 30-	
LM	LDW280-28096	LTA-8(18)	1 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-11124-23, -24, -29 & 35		GAEC SCH NO. 30	

LFM126	LDW280-28096	LTA-8(18)	1
LM	LDW280-28096	LTA-8(18)	1
PART NO. LDW280-11124-41			
LM	LDW280-28096	LM-2(32)	1 EA
LM	LDW280-28096	LM-1(31)	1 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-11124-21, -22, -25, -33 & -47		GAEC SCH NO. 30-	

LFM126	LDW280-28096	LTA-8(18)	1EA
PART NO. LDW280-11124-23-1, -24-1, -29-1 & -35-1			
LFM126	LDW280-28096	LTA-8(18)	1
LM	LDW280-28096	LM-2(32)	1
LM	LDW280-28096	LM-1(31)	1
LM	LDW280-28096	LTA-8(18)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-11124-43		GAEC SCH NO. 30-	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	D	D	D	D
SHEET		1.11		
REV		D		
SHEET				
REV				

LAST SECT LTR USED	.	GRUMMAN REL INFO D
LAST DASH NO. USED	-50	PRIM NO. 215 K(101) MP 16D-5/13/68

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.010 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	AUGELLO. 4-28-66	Thermo	AJ FORTR 9/17/66 Ⓓ
LAYOUT BY	DIJENNARO 5/3/66		
CHECKED	5-2-66		
GR. LEADER	G Lusatu 5/3		
VEH DES.	5/4		
STRUCT	5/5	PROJ ENGR	5-10
STRUCT.	Hilderman 5/5	REL GROUP	Botti 5-11-66
WEIGHTS	5-1		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SHIELD
ASCENT STAGE - CABIN
THERMAL SHIELD

SIZE B
CODE IDENT NO. 26512
LDW280-11124 D Ⓓ
SCALE NONE
SHEET 1.00 OF 5

REV D CDR 5-1-68

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~[illegible]~~ APPD
A	1	1.00 2.00 3.00 1.10						Ⓡ	SH 1.00 OF 4 WAS SH 1.00 OF 3, ADDED SH 1.10, IN F/D & B/M LDW 280-11124-21 & -23 WAS -11, LDW280-11124-22 & -24 WAS -12, LDW 280-11124-25 & -29 WAS -13, LDW280-11124-27 & -31 WAS -15, ADDED SECTIONS FOR ABOVE & ADDED NOTE #2	LTA-8(18) LEM-1(31) LEM-2(32)		-11 -12 -13 -15	A SCHMIDTKE 6-21-66 EG		
B	1					✓		EO B1	CANCELLED BY EO B2	NOT REQD	NOT	REQD	RACollett 9/28/66		
	2	1.00,1.10 2.00,3.00				✓		EO B2	CANCELLED EO B1, CREATED -33 & -35 & CANCELLED -27 & -31	LTA-8(18) LEM-1(31) & -2(32)		-27 & -31			
	3							EO B3	CANCELLED BY EO B4	NOT REQD	NOT	REQD			
	4							EO B4	CANCELLED EO B3	NOT REQD	NOT	REQD			
C	1	1.10,3.00	7A					EO C1	REVISED TRIM OF -17 -19 -27 & -31	LTA-8 LEM-1 & -2	✓		P. MONACO 12-5-66	RVP 12-6 HTW 12-7-66	12-7-66
	2	1.00,1.10, 2.00,3.00	7A					EO C2	REMOVED -17 & -19 ADDED -37 & -39			17 & 19			
	3	1.00,1.10 2.00,3.00	7A					EO C3	REF EO C2 ADDED -41 & -43 WAS ADDED -37 & -39		✓				
	4	1.10							REF EO C1 -27 & -31 PREV CANCELLED PER EO B2	NOT REQD	NOT	REQD			
	5	1.00,1.10 2.00,3.00	6B 10B 3B						CREATED -37, -38, -39, & -45 REVISED TRIM OF -33 & -35 F2	LEM-3 THRU-15	✓				
D	1	1.00,2.00 3.00	8A	1				EO D1	REMOVED LM-1 & LM-2 FROM -41 MODEL BLOCK, ADDED -47	LM-1(31) LM-2(32)		-41	INGOGLIA 4-17-68		
	2	3.00		1	✓			LEO280-502	ADDED NOTE 3	LTA-8(18) LM-1(31) THRU LM-15(45)	✓				
	3	3.00 1.00 2.00	10A 10B 10C	1			✓	EO D3	REMOVED -37 & -38 FROM N/A LDW280-53096, EFF: LM-3 THRU LM-15 & ADDED -49 & -50	LM-3(33) THRU LM-15(45)		✓			
	4	3.00	10B 10C	1			✓	EO D4	ON -49 & -50, ADDED 'IML BDN 38°' AND 'IML BUP 26° 30'	LM-3(33) THRU LM-15(45)	✓				

CHG APPROVED

LTR	GROUP LDR	VDI	STRUCTURES	STRUCTURES	WEIGHTS	THERMO
C	—	RVPhillips 12-6	EB			

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11124	D

SCALE NONE

SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
D	5	1.00		LFM140		✓		LEO280-892 LCD 2360	FOR -33, -45, -49 & -50, REMOVED LM-4(34) THRU LM-15(45) EFFECTIVITY; ADDED SH.1.11, NOTE 4	LM-4(34) THRU LM-15(45)		✓	INGOGLIA 4-17-68		
	6	1.00, 2.00 3.00	3B 6B 11B 10C	LFM126		✓		LCD1021-33 ok.	IN FLD, B/M & M/B ADDED -23-1, -24-1, -29-1 & -35-1 ON -41 & -43 ADDED END ITEM LFM126 REQUIREMENTS.	LTA-8(18)	NOT	REQD		HHZ	

	LTR	GROUP LDR	VEH DES INT	STRUCT	STRUCT	WEIGHTS	THERMO				
CHG APPROVED	D	ok FDR	5/1/68	HHZ 5/2/68	5/1/68		5/1/68				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11124	D
SCALE	NONE	SHEET	1.11

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11124-35-1	E	SHIELD	MAKE FROM LDW280-11310-13-4			13¾X31⅞	NONE	NONE	3B
		-29-1	E					14¾X31⅞			6B
		-24-1	E					21X30¾			11B
		LDW280-11124-23-1	E	SHIELD	MAKE FROM LDW280-11310-13-4			21X30¾	NONE	NONE	11B
		LDW280-11124-47	E	ANGLE	AL ALLOY SH	QQ-A-250/5	2024	.020X8X30⅝	T42	76	8A
		LDW280-11124-45	E	SHIELD	AL ALY SH	SEE NOTE 2		.015×13¾×31⅞	NONE	SEE NOTE #2	3B
		-39						.015×14¾×31⅞			6B
		-50						.020×20×30¾			11B
		-49			AL ALY SH	SEE NOTE 2		.015×20×30¾		SEE NOTE 2	11B
		-35			MAKE FROM LDW280-11310-11			13¾×31⅞		NONE	3B
		-33			AL ALY SH	SEE NOTE 2		.015×13¾×31⅞		SEE NOTE #2	3B
		-29			MAKE FROM LDW280-11310-11			14¾X31⅞		NONE	6B
		-25			AL ALLOY SH	SEE NOTE #2		.015X14¾X31⅞		SEE NOTE #2	6B
		-24			MAKE FROM LDW280-11310-11			21 X 30¾		NONE	11B
		-23			MAKE FROM LDW280-11310-11			21 X 30¾		NONE	11B
		-22			AL ALLOY SH	SEE NOTE #2		.020X20X30¾		SEE NOTE #2	11E
		-21		SHIELD	AL ALLOY SH	SEE NOTE #2		.015X20X30¾	NONE	SEE NOTE #2	11E
		-43		ANGLE	AL ALLOY SH	QQ-A-250/5	2024	.020X8X30⅝	T42	76	8A
		DW280-11124-41	E	ANGLE	AL ALLOY SH	QQ-A-250/5	2024	.020X8X30⅝	T42	76	8

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T42	AL HEAT TREAT	MIL-H-6088
						76	ALODINE	LSP 14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11124	D

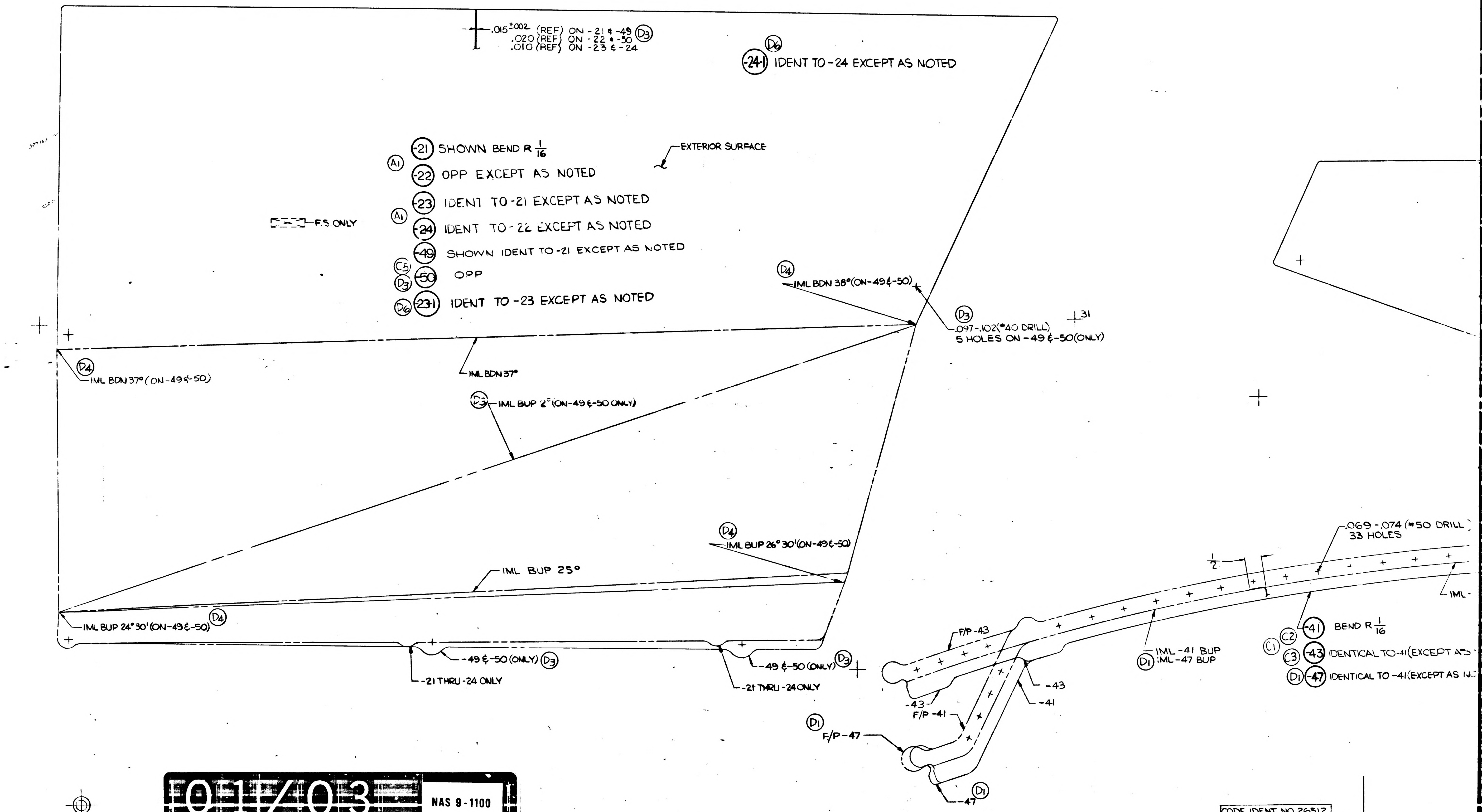
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

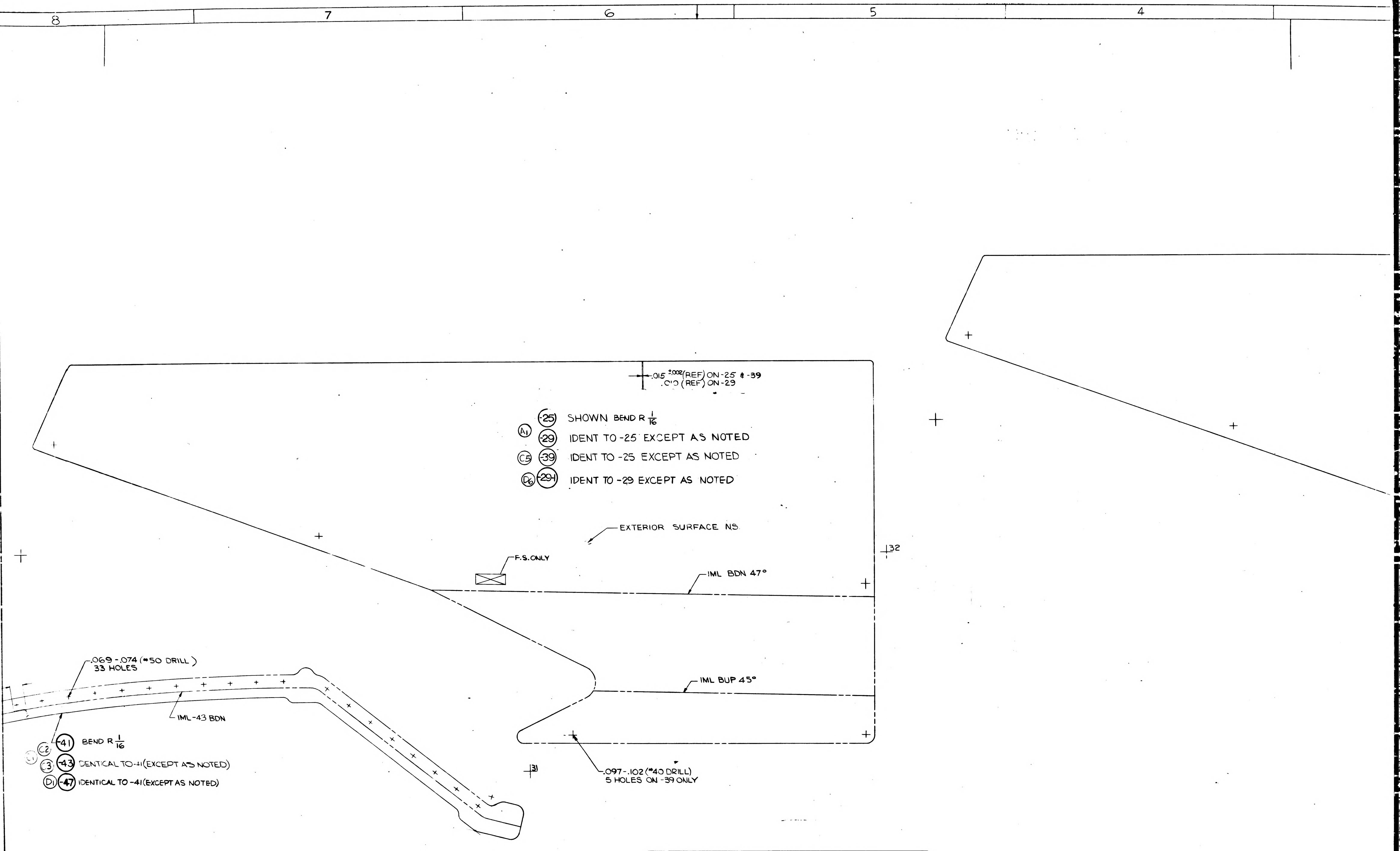
01

NAS 9-1100


.015 ±.002 (REF) ON -21 & -49 (D3)
.020 (REF) ON -22 & -50
.010 (REF) ON -23 & -24
(D6)
-24-1 IDENT TO -24 EXCEPT AS NOTED
(A1)
-21 SHOWN BEND R 1/16
-22 OPP EXCEPT AS NOTED
EXTERIOR SURFACE
(A1)
-23 IDENT TO -21 EXCEPT AS NOTED
-24 IDENT TO -22 EXCEPT AS NOTED
F.S. ONLY
-49 SHOWN IDENT TO -21 EXCEPT AS NOTED
(C5) (D3) -50 OPP
(D6) -23-1 IDENT TO -23 EXCEPT AS NOTED
(D4) IML BDN 38°(ON -49 & -50)
(D3) .097-.102(#40 DRILL) 5 HOLES ON -49 & -50(ONLY)
31
(D4) IML BDN 37°(ON -49 & -50)
IML BDN 37°
(D3) IML BUP 2°(ON -49 & -50 ONLY)
(D4) IML BUP 26°30'(ON -49 & -50)
IML BUP 25°
IML BUP 24°30'(ON -49 & -50) (D4)
-49 & -50 (ONLY) (D3)
-21 THRU -24 ONLY
-49 & -50 (ONLY) (D3)
-21 THRU -24 ONLY
.069-.074 (#50 DRILL
33 HOLES
1/2
IML -
F/P -43
IML -41 BUP
(D1) IML -47 BUP
(C2) -41 BEND R 1/16
(C1) (C3) -43 IDENTICAL TO -41(EXCEPT AS
(D1) -47 IDENTICAL TO -41(EXCEPT AS N
-43
-41
-43
F/P -41
(D1) F/P -47
-47 (D1)
12
11
10
9
8
C
B
A

01/03 NAS 9-1100

CODE IDENT NO 26512
LDW280-11124
SH 3

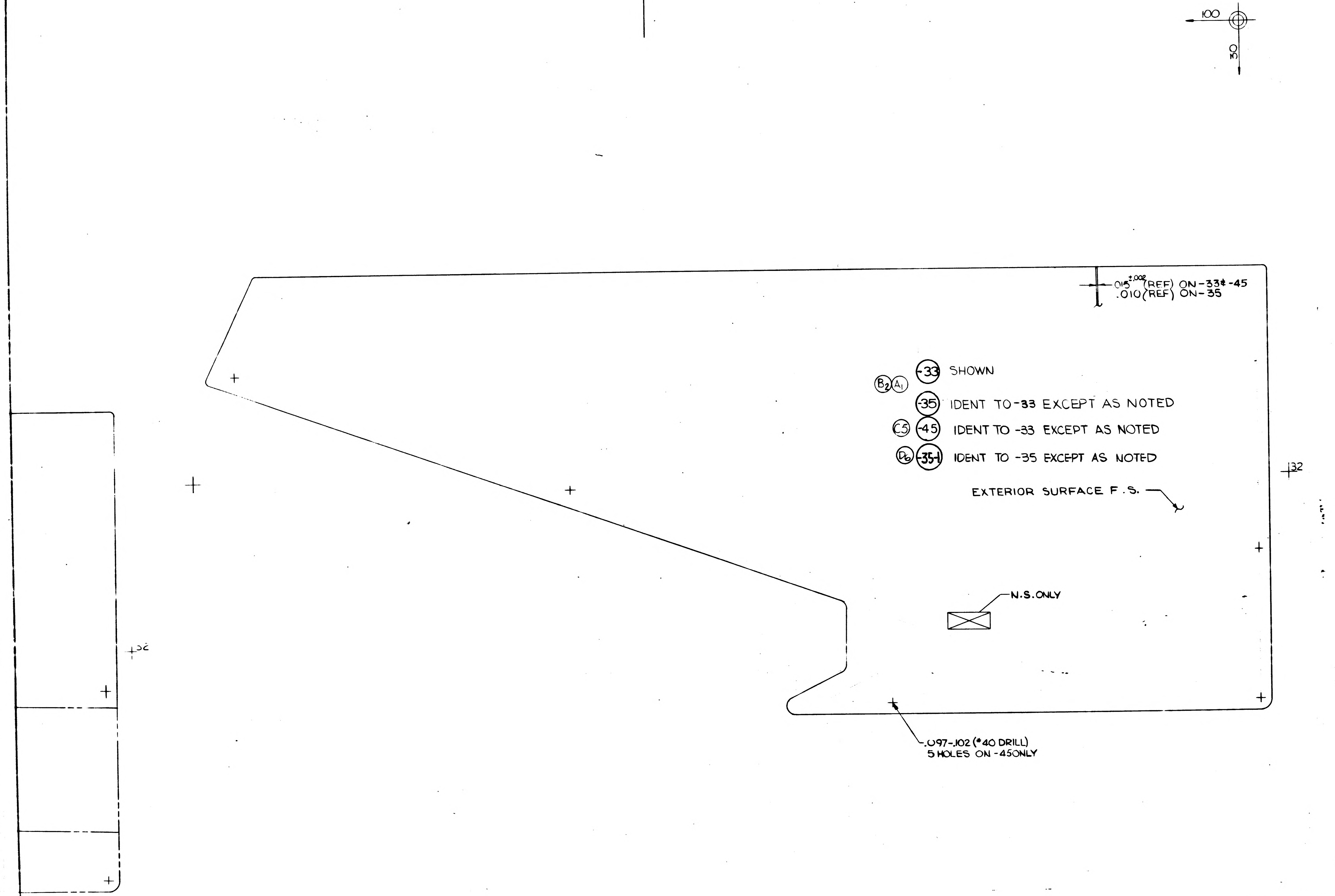

8
7
6
5
4
.015 ±.002 (REF) ON -25 & -39
.010 (REF) ON -29
-25 SHOWN BEND R 1/16
A1 -29 IDENT TO -25 EXCEPT AS NOTED
C5 -39 IDENT TO -25 EXCEPT AS NOTED
D6 -294 IDENT TO -29 EXCEPT AS NOTED
EXTERIOR SURFACE NS
F.S. ONLY
IML BDN 47°
IML BUP 45°
32
31
.097-.102 (#40 DRILL)
5 HOLES ON -39 ONLY
.069-.074 (#50 DRILL)
33 HOLES
IML-43 BDN
C2 -41 BEND R 1/16
C3 -43 IDENTICAL TO -41 (EXCEPT AS NOTED)
D1 -47 IDENTICAL TO -41 (EXCEPT AS NOTED)

02/03 NAS 9-1100

E IDENT NO 26512
W280-11124 SH 3

CODE IDENT NO. 26512
LDW280-11124 SH 3

8 7 6 5 4


100
30
.015±.002 (REF) ON-33 & -45
.010 (REF) ON-35
B2 A1 -33 SHOWN
-35 IDENT TO -33 EXCEPT AS NOTED
C5 -45 IDENT TO -33 EXCEPT AS NOTED
D6 -35-1 IDENT TO -35 EXCEPT AS NOTED
EXTERIOR SURFACE F.S.
32
32
N.S. ONLY
.097-.102 (#40 DRILL)
5 HOLES ON -45 ONLY

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 34 X 118

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 129)= 32.5 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL)= 9.5 SQ. FT.

PRINT TRIM LINE

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. MAKE LDW280-11124-21,-22,-25,-33,~~-49,-50~~,-39 & -45 FROM 2024-T3 ALCLAD BOTH SIDES (SKIN QUALITY). FINISH ALUMALITE 200/R1/EB10 WHICH MAY BE PURCHASED FROM ALUMINUM CO OF AMERICA (CODE IDENT 01634).
   a. THE SURFACE DESIGNATED "EXTERIOR" SHALL BE PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROLL PRODUCTS, INC. FARMINGDALE, N.Y.
   b. REMOVE FINISH ALUMALITE 200/R1/EB10 (ANODIZE) FROM INTERIOR SURFACE & REFINISH WITH FINISH #76
3. MATERIAL, FINISHES, HANDLING AND PERMISSIBLE DEVIATIONS PER LPC-280-16.
4. THIS DWG AFFECTED BY THE FOLLOWING LFM(S). SEE LFM FOR EFFECTIVITY AND MODIFICATION, LFM 140.

03/03 NAS 9-1100

CODE IDENT NO. 26512
LDW280-11124 SH 3

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK
LEM
MODEL OR END ITEM
SIZE J
CODE IDENT NO. 26512
LDW280-11124
D
SCALE FULL
SHEET 3.00

LDW280-11124 D

LDW280-11124D

1 FOR PHOTO REPRODUCTION K2

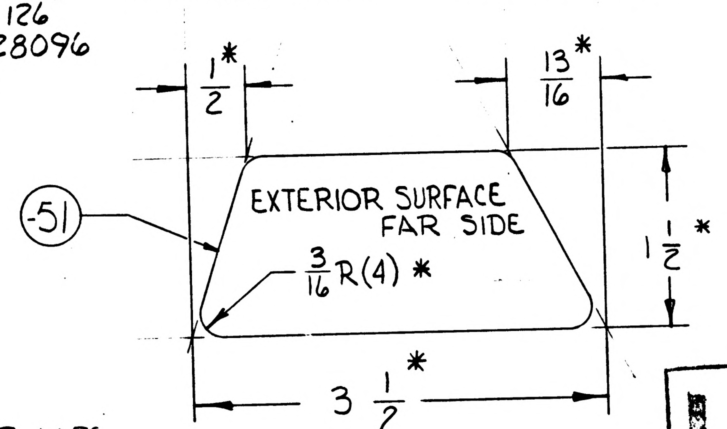
ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11124		EO NO. E1	
CONTROL INFO NO. LDW280B4294			

ADD -51 SHIELD ~ MAKE FROM LDW280-11310-13-4
PROCESS "NONE" FINISH "NONE"

END ITEM "LFM 126"
N/A ~ LDW280-28096
EFF: LTA-8 (18)
1 REQ'D/MOD



LFM

* DIM'S ARE FOR MFG. PURPOSES ONLY & ARE NOT TO APPEAR ON DWG.

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 1021-33 PKG 4 SHT 11	⑤

REASON FOR EO	DESCRIPTION OF EO	GAEC/C EO RELEASE
TO COVER HOLE IN LTA-8/LM-5 CONFIGURATION SKIN ASSY.	ADDED - 51	PP 6-29-68

MODEL	~~PROCURING ACTIVITY NO.~~ E1	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 126	LTA-8 (18)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓		NOT	REQ'D
REVISE DWG	RECORD EO	REWORK	SCRAP

APPROVED BY	JWS	AB		7.DR				
DATE	6/25/68	6/27/68		6/28/68			6/28/68	
	VDI	THERM ~~SUPPORT~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~COVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SHIELD A/S ~ CABIN ~ SIDE BUBBLE	LDW280-11124	E1

6-28-68
ISSUED BY D. KLINGENER X7033 SECTION VDI GROUP NO. 335 PL 25

01 NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO-280	EO NO. 1051
CONTROL INFO NO. LDW280B-4399	

IN M/B ADD N/A LDW280-53096, EFF. LM-4 (34) TO THE FOLLOWING DWGS:

DWG. NO.	DASH NO.✻	CHANGE NO.
LDW280 - 11124	-49, -50, -39, -45	E2
- 11125	-13, -14, -33 -34, -31, -25	G 2
-11126	-17, -18, -19	B2
-11127	-33, -34, -35, -39	E 2
-11131	-21, -31, -35, -37	D2
-14344	-1	F1
-11612	-15, -16, -17 -19, -21, -23	B4
-11613	-11, -12, -13 -14, -15, -25 -21, -22, -24	A6
-11614	-11, -13, -14 -15, -17, -12	B3
LDW280P 11321	-11, -13	C5

END ITEM & NO. REQD. SAME AS FOR LM-3 (33)

REWORK INFO.- DETAIL PARTS IN EXISTENCE MAY BE USED.

LFM

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	V	LCD 2360 PKG 32 SH 1	(5)

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
UPDATED LM-4 (34) REQ.	FOR DASH ✻ ADDED LM-4 EFF, N/A LDW280-53096	VK 7/18/8

MODEL	EFFECTIVITY: ~~PROCURING ACTIVITY NO.~~ E1	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM	LFM140	LM-4	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		
V REVISE DWG	RECORD EO	NOT REWORK	REQ SCRAP	

	VDI	~~SUPPORT~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONT~~
DATE	7/11/68	7/12/68		7/10/68			7/13/68	7-17-68

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DWGS,	LEO 280	1051

ISSUED BY '563 H. TREFFEISEN x 7033 SECTION VD1 GROUP NO. 335 PL 25

01
NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28096	LTA-8(18)	1
PART NO LDW280-11125-21			
LM	LDW280-28096	LM-2 (32)	4
LM	LDW280-28096	LM-1 (31)	4
LM	LDW280-28096	LTA-8(18)	4
PART NO LDW280-11125-29			
LM	LDW280-53096	LM-15(45)	1EA
		LM-14(44)	1EA
		LM-13(43)	1EA
		LM-12(42)	1EA
		LM-11(41)	1EA
		LM-10(40)	1EA
		LM-9(39)	1EA
		LM-8(38)	1EA
		LM-7(37)	1EA
		LM-6(36)	1EA
		LM-5(35)	1EA
		LM-4(34)	1EA
	LDW280-53096	LM-3(33)	1EA
	LDW280-28096	LM-2(32)	1EA
	LDW280-28096	LM-1(31)	1EA
LM	LDW280-28096	LTA-8(18)	1EA
PART NO. LDW280-11125-13,-14, -25		GAEC SCH NO. 30	

D

LDW280-11125

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53096	LM-15(45)	1EA
		LM-14(44)	1EA
		LM-13(43)	1EA
		LM-12(42)	1EA
		LM-11(41)	1EA
		LM-10(40)	1EA
		LM-9(39)	1EA
		LM-8(38)	1EA
		LM-7(37)	1EA
		LM-6(36)	1EA
		LM-5(35)	1EA
		LM-4(34)	1EA
LM	LDW280-53096	LM-3(33)	1EA
PART NO. LDW280-11125-33&-34		GAEC SCH NO. 30	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53096	LM-15(45)	1
		LM-14 (44)	1
		LM-13 (43)	1
		LM-12 (42)	1
		LM-11 (41)	1
		LM-10 (40)	1
		LM-9 (39)	1
		LM-8 (38)	1
		LM-7 (37)	1
		LM-6 (36)	1
		LM-5 (35)	1
		LM-4 (34)	1
	LDW280-53096	LM-3 (33)	1
	LDW280-28096	LM-2 (32)	1
LM	LDW280-28096	LM-1 (31)	1
PART NO. LDW280-11125-31			
LM	LDW280-28096	LM-2(32)	1EA
LM	LDW280-28096	LM-1(31)	1EA
LM	LDW280-28096	LTA-8(18)	1EA
PART NO. LDW280-11125-11,-12, -15, -16, -27, & -28		GAEC SCH NO. 30-	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	D	D	D		D				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED A

LAST DASH NO. USED -34

GRUMMAN REL INFO D

PRIM NO.	LE(001)		SMF
215	MP14	D-1-23-7	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM I
DOCUMENTATION TYPE II

DRAWN BY	GIERAK 4-29-66	RELIABILITY	
LAYOUT BY	DIJENNARD 5-6-66		
CHECKED BY	J.S. 5-5-66		
GR LEADER	C. Paxton 5/7/66		
VEH DES INT	5/9		
STRUCTURES	5/11	PROJ ENGR	Allen/KMC 5-19-66
STRUCTURES	Anderman 5/11	REL GROUP	Britt 5-21-66
WEIGHTS	5-19		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE · CABIN · THERM · SHIELD

SIZE	CODE IDENT NO.		
B	26512	LDW280-11125	D
SCALE	NONE	SHEET 1.00 OF 4	

1 12-65

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NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
A	1	1.00,1.10 2.00 & 3	3B 6B					E.O A1	REMOVED -17 & -19. ADDED -21 & -23, ADDED SH.1.10. Ⓡ SH.1.00 OF 4 WAS SH 1.00 OF 3	LTA-8, LEM1 & 2		-17 -19	AUGELLO 7-27-66		
B	1	1.10, 3.00	3D					EO B1	REVISED TRIM OF -11 & -12	LTA-8 LM-1 & 2	✓		J Gardella 11-30-66		
	2	1.00,1.10 2.00 & 3.00	6B					EO B2	REMOVED -23, ADDED -25	LTA-8 LM-1 & -2		-23			
	3	1.00 & 1.10						EO B3	IN M/B ON -13, -14, -21 & -25 ADDED N/A LDW280-53096	LM-3 THRU LM-15	NOT	REQ'D			
	4	1.00,1.10 2.00 & 3.00	5F						ADDED -33 & -34	LM-3 THRU LM-15	NOT	REQD		RVPes 12-19-66	
	5	3.00	4G						REVERSED VIEW A-A ARROWS TO CONFORM Ⓣ WITH THE VIEW.	LTA-8, LM-1 THRU -15					
C	1	1.00,1.10,						EO C1	ADDED -27	LTA-8	NOT	REQ'D	P. CARSTENSEN 1-13-67		
	2	2.00 & 3.00						EO C2	TRIMMED -27, ADDED -28 & -29, IN MOD BLK, FOR -27, QTY 1 (WAS) 2	LM-1 & -2	-27				
D	1							EO D1	ADDED -31. IN MOD BLK REMOVED LM-1 & LM-2 FROM -21.	LM-1 & -2		-21			
	2	1.00,1.10, 2.00 & 3.00						EO D2	REF EOD1 25/32 WAS 21/32		-31				
	3							EO D3	IN MOD. BLK (-31), ADDED LM-3(33) THRU LM-15 (45) EFF. N/A-LDW280-53096. REMOVED -21	LM-3 THRU LM-15		-21			
	4								REF B4 IN F/D CALLOUT FOR -33 (7 PLACES) WAS -27 (7 PLACES)	NOT REQD	NOT	REQ'D			

CHG APPROVED

LTR	GROUP LDR	VES.DES.INT.	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY
A	R.V. Phillips					
B	R.V. Phillips					
C	R.V. Phillips					
D	R.V. Phillips					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11125	D
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11125-34	E	ANGLE	AL ALLOY SH	QQ-A-250/4	2024	.020 × 7 × 23	T42	88	
		-33		ANGLE			2024	.020 × 7 × 23	T42	88	
		-31		ANGLE			2024	.020 × 2 × 6	T3/T42	88	
		-29		DOUBLER			2024-T3	.020 × 2 × 2	NONE	76	
		-28		ANGLE			2024-T3	.020 × 2 × 2	NONE	88	
		-27		ANGLE			2024-T3	.020 × 2 × 2	NONE	88	
		-25		ANGLE			2024-T3	.020 × 2 × 6	NONE		
		-16		ANGLE			2024	.020 X 5¾ × 23	T42		
		-15		ANGLE			2024	.020 x 5¾ × 23	T42		
		-14		STIFFENER			2024	.032 X 2⅝ X 25⅞	T42		
		-13		STIFFENER			2024	.032 X 2⅝ X 25⅞	T42		
		-12		ANGLE			2024	.020 X 2⅛ X 22⅞	T3/T42		
		LDW280-11125-11	E	ANGLE	AL ALY SH	QQ-A-250/4	2024	.020 X 2⅛ × 22⅞	T3/T42	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
58	ANODIZE	LSP14-9030
T42	AL HEAT TREAT	MIL-H-6088
76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

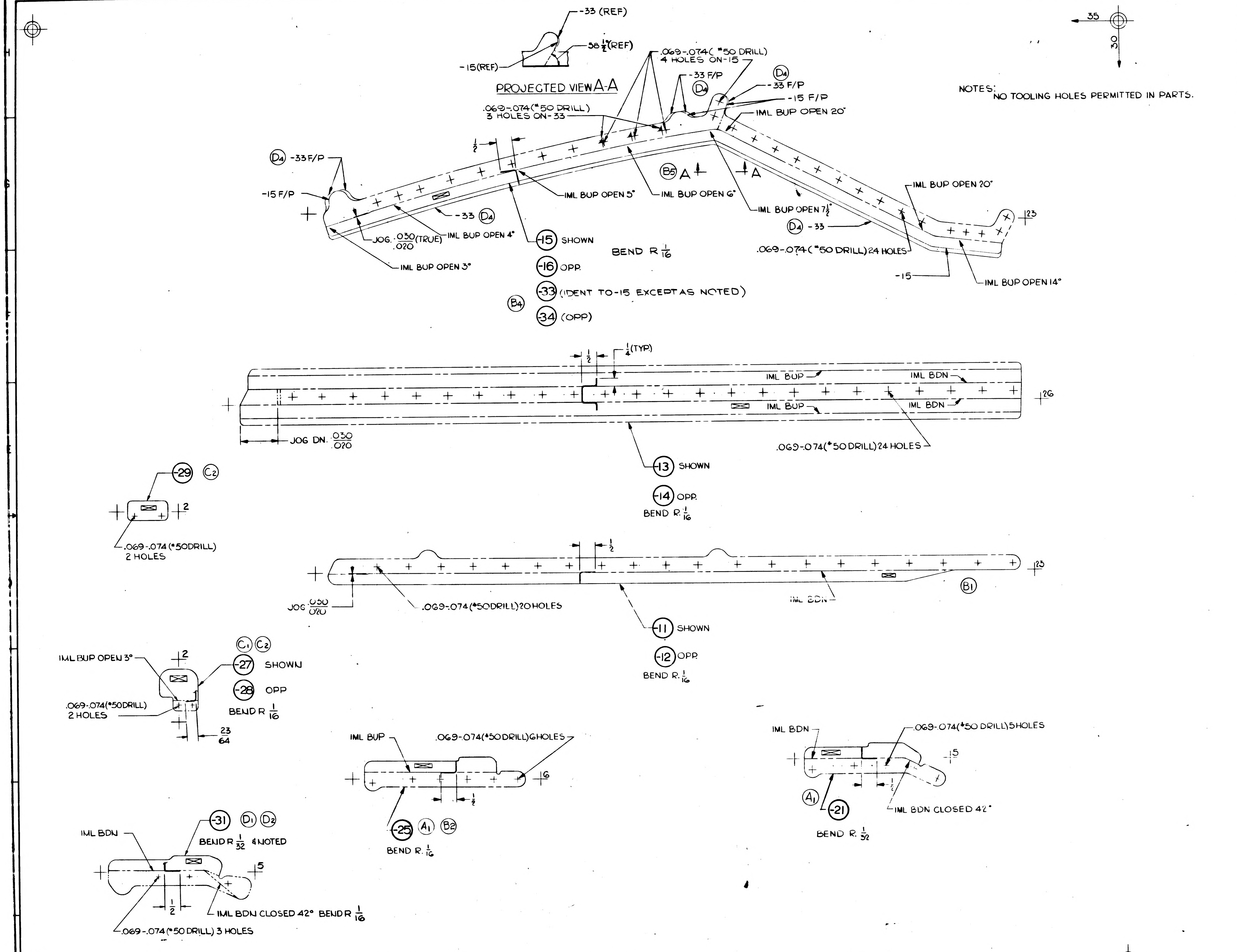
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11125	D

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01 NAS 9-1100


-33 (REF)
-58½°(REF)
-15(REF)
PROJECTED VIEW A-A
.069-.074(#50 DRILL) 4 HOLES ON-15
-33 F/P
D4
-33 F/P
-15 F/P
IML BUP OPEN 20°
.069-.074(#50 DRILL) 3 HOLES ON-33
½
D4 -33 F/P
-15 F/P
B5 A
A
IML BUP OPEN 5°
IML BUP OPEN 6°
IML BUP OPEN 20°
-33 D4
IML BUP OPEN 7½°
D4 -33
123
JOG .030/.020 (TRUE)
IML BUP OPEN 4°
IML BUP OPEN 3°
-15 SHOWN
-16 OPP.
BEND R 1/16
.069-.074(#50 DRILL)24 HOLES
-15
IML BUP OPEN 14°
B4
-33 (IDENT TO-15 EXCEPT AS NOTED)
-34 (OPP)
35
30
½
¼(TYP)
IML BUP
IML BDN
IML BUP
IML BDN
126
JOG DN. .030/.020
.069-.074(#50 DRILL)24 HOLES
-13 SHOWN
-14 OPP.
BEND R. 1/16
-29 C2
2
.069-.074(#50DRILL) 2 HOLES
½
½
123
B1
IML BDN
JOG .030/.020
.069-.074(#50DRILL)20 HOLES
-11 SHOWN
-12 OPP.
BEND R. 1/16
C1 C2
IML BUP OPEN 3°
2
-27 SHOWN
-28 OPP
BEND R 1/16
.069-.074(#50DRILL) 2 HOLES
23/64
IML BUP
.069-.074(#50 DRILL)6HOLES
16
½
-25 A1 B2
BEND R. 1/16
IML BDN
.069-.074(#50 DRILL)5HOLES
5
½
A1
-21
IML BDN CLOSED 42°
BEND R. 1/32
-31 D1 D2
BEND R 1/32 & NOTED
IML BDN
5
½
IML BDN CLOSED 42° BEND R 1/16
.069-.074(#50 DRILL) 3 HOLES

NOTES:
NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

NOL NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

SIZE E	CODE IDENT NO. 26512	LDW280-11125	D
MODEL OR END ITEM LM	SCALE FULL		SHEET 3.00

2 . FOR PHOTO REPRODUCTION 1

K2

LDW280-11125 D

ENG 32.1 REV 3-65 C

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11125	EO NO. F1
CONTROL INFO NO. LDW280A-5761	

FOR -29 IN M/B:
ADD N/A LDW280-28347
EFF LTA-8 (18), LM-1 (31) & LM-2 (32)
(4 REQ'D/MOD)

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐	3

REASON FOR EO: PART REQUIRED ON N/A

DESCRIPTION OF EO: FOR -29 IN M/B: ADDED N/A LDW280-28347 EFF LTA-8, LM-1 & LM-2

Ⓡ GAEC C EO RELEASE JK 3/7/67

MODEL	EFFECTIVITY PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8 (18	
		LM-1 (31	
		LM-2 (32)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D — REWORK SCRAP

APPROVED BY	Jaf			—			Dam	
DATE	03/2/67			—			3/6/67	3/7/67
6	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY C

DRAWING TITLE: ANGLE A/S CABIN THERMAL SHIELD

DRAWING NO. LDW280-11125

EO NO. F1

ISSUED BY M. SHAPIRO X1153 SECTION VDI GROUP NO. 335 PL 35

01 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11125
EO NO. F2
CONTROL INFO NO. LDW280A-6660

ON-29 ADD LM-3(33) THRU LM-15(45) EFF.

NEXT ASSY LDW280-53096, 4 EA REQ'D/VEH

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐	LCD-1443

3

REASON FOR EO: TO PROVIDE REMOVAL OF ADJACENT PANEL

DESCRIPTION OF EO: ON-29 ADDED LM-3(33) THRU LM-15(45) EFF

GAEC EO RELEASE: JK 5/10/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3(33)	
		THRU	
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK NOT | SCRAP REQ'D

APPROVED BY								
DATE	5/6/67			5/6/67	5/8/67		5-9-7	5/9/67
5	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C
DRAWING TITLE: ANGLE ~ A/S CABIN THERMAL SHIELD
DRAWING NO. LDW280-11125
EO NO. F2

ISSUED BY Louis Berlinquette X1392
SECTION VDI
GROUP NO. 335
PL 25

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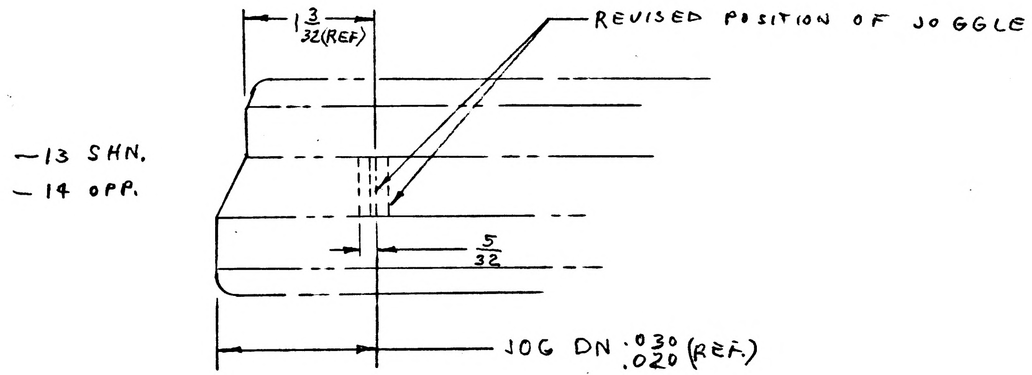
NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11125
EO NO. F3
CONTROL INFO NO. LM-3-5889



DETAIL SPEC REQ	☐	CL II ENGRG CHG	✓	CL I ENGRG CHG	☐

REASON FOR EO: IMPROVE FIT ON ASSEMBLY

DESCRIPTION OF EO: RELOCATED JOGGLE ON -13 & -14

GAEC EO RELEASE: VK (3)

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-4 (34)	
		THRU	
		LM-15 (45)	

DRAWING CHANGE REQD: ✓ REVISE DWG / RECORD EO

DISPOSITION OF PARTS: ✓ REWORK / SCRAP

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY				–	BM			Botta
DATE	1/13/68				1-9-68	1-9-68	1/13/68	1-10-68
	VDI							

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	ANGLE A.S. - CABIN THERMOSHIELD	LDW280-11125	F3

ISSUED BY LIAISON / VIC BOLLO X2151 SECTION VDI GROUP NO. 280 PL 25

01

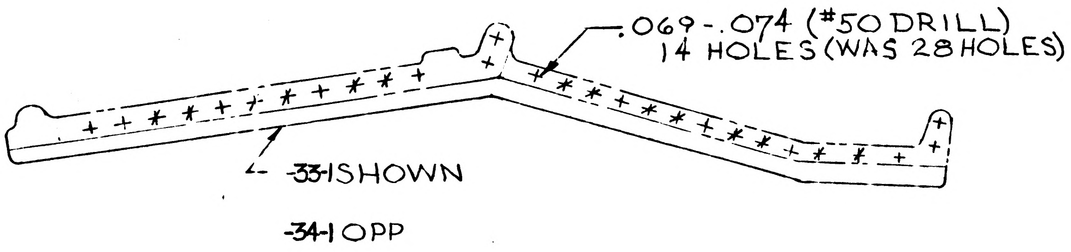
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

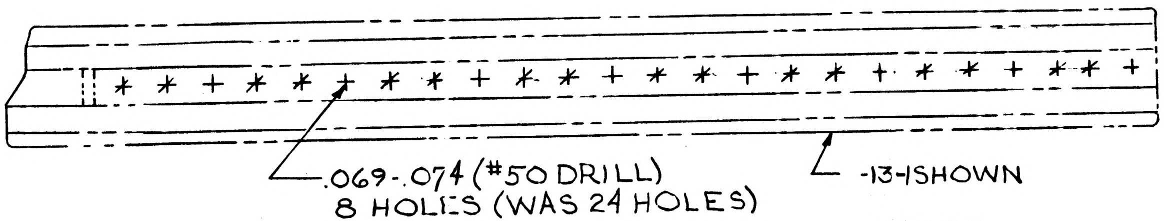
ENG 32.2 REV 3-65

DWG. NO. LDW280-11125	EO NO. F4		
CONTROL INFO NO. LDW280B2654			

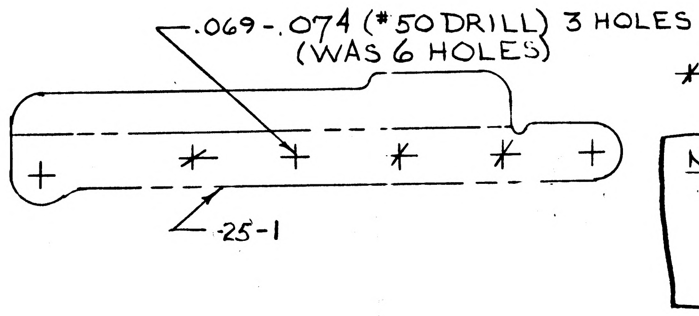
ADDED -13-1, -14-1, -25-1, -31-1, -33-1 & -34-1 IDENT. TO -13, -14, -25, -31, -33 & -34 RESPECTIVELY EXCEPT AS SHOWN.


.069-.074 (#50 DRILL)
14 HOLES (WAS 28 HOLES)
-33-1 SHOWN

-34-1 OPP

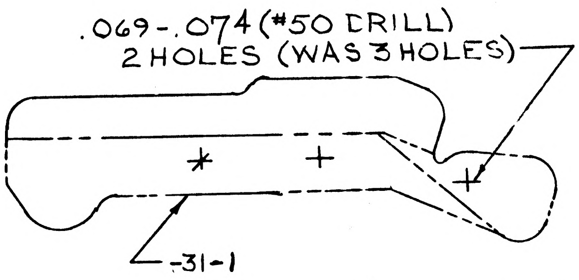

.069-.074 (#50 DRILL)
8 HOLES (WAS 24 HOLES)
-13-1 SHOWN

-14-1 OPP


.069-.074 (#50 DRILL) 3 HOLES
(WAS 6 HOLES)
-25-1

✱ #50 DRILL HOLES TO BE OMITTED

NOTE: REWORK INFO
EXISTING PARTS MAY BE USED PILOT HOLES CAN BE LEFT OPEN.


.069-.074 (#50 DRILL)
2 HOLES (WAS 3 HOLES)
-31-1

LFM

FOR -13, -14, -25, -31, -33, -34 & -29
IN M/B ~ REMOVE N/A REQM'TS FOR
LDW280-53096 ON. LM-4(34) THRU
LM-15 (45)
ADD -13-1, -14-1, -25-1, -31-1, -33-1 & -34-1
N/A LDW280-54096 FOR LM-4(34) THRU LM-15(45)

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 2360 PKG #28	(5)

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
PLUME HEATING PROTECTION	REMOVED LM4 THRU LM-15 FROM -13, -14, -21, -31, -33, -34, & -29 ADDED -13-1, -14-1, -21-1, -31-1, -33-1 & -34-1	JC 3/26/8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD	DISPOSITION OF PARTS
LM	LEM 140	LM-4(34) & LM-5(35)		REVISE DWG ✓	RECORD EO
LM		LM-6(36) THRU LM-15(45)			REWORK: NOT REQ'D

	VDI	SUPPORT THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GAEC
APPROVED BY	JRS	MO		FAR	GS		Jap	
DATE	3/21/68	3/21/68		3-20-68	3/21/68		3/21/68	3-26-68

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	ANGLE-A/S-CABIN-THERMAL SHIELD	LDW280-11125	F4

3/21/68 ISSUED BY HERB DONNER X7033 SECTION VDI GROUP NO. 335 PL 25

01 NAS 9-1100

01
NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280		EO NO. 1049
CONTROL INFO NO. LDW280-B4398		

IN M/B REMOVE LM-4 (34) EFF. N/A LDW280-54096
FOR THE FOLLOWING DWGS:

DWG. NO.	DASH NO.	CHG. NO.
LDW280-11125	-13-1, -14-1, -25-1, -31-1, -33-1, -34-1	G1
11126	-17, -18, -19	B1
11127	-33-1, -34-1, -35, -39	E1
11131	-21, -31-1, -35-1, -37	D1
11612	-15-1, -16-1, -17-1 -19-1, -21-1, -23-1	B3
11613	-11, -12, -13, -14, -15 -21, -22, -24, -25	A5
11614	-11, -12, -3, -14 -15, -17	B2
12000	-1, -2, -3, -11, -12 -15	A1
12001	-1, -3, -11, -15	A1
12008	-11, -13	A6
LDW280-P11321	-11, -15	C4

LFM

DETAIL SPEC REQ ☐	CL II ENGRG CHG ☐	CL I ENGRG CHG ☑	LCD2360 PKG 32 SH 2 & 4									⑤
REASON FOR EO: UPDATED LM-4 (34) REQ.			DESCRIPTION OF EO: REVISED EFF. DETAIL DWGS FOR N/A LDW280-54096									GAEC EO RELEASE: H.F 7/17/68
MODEL	EFFECTIVITY: ~~PROCURING ACTIVITY NO.~~ E1	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG ✓	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP ✓	APPROVED BY / DATE	VDI 7/11/68	~~SUPPORT~~ THERM 7/12/68	RELIAB. GROUP	GROUP LEADER H.D.Rus 7/10/68
LM	LFM 140	LM-4 (34)										
				PRIORITY: C	DRAWING TITLE: SEE DWG.			DRAWING NO.: LEO 280				EO NO.: 1049

STRESS GROUP | LIAISON ENGRG | PROJ ENGRG 7/13/68 | ~~GOOD~~ 7-17-68

7-15-68
ISSUED BY H TREFFEISEN x7033 SECTION VDI GROUP NO. 335 PL 25

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO.	LEO-280	EO NO.	1051
CONTROL INFO NO.	LDW280B-4399		

IN M/B ADD N/A LDW280-53096, EFF. LM-4 (34) TO THE FOLLOWING DWGS:

DWG. NO.	DASH NO.*	CHANGE NO.
LDW280-11124	-49, -50, -39, -45	E2
-11125	-13, -14, -33 -34, -31, -25	G 2
-11126	-17, -18, -19	B2
-11127	-33, -34, -35, -39	E 2
-11131	-21, -31, -35, -37	D2
-14344	-1	F1
-11612	-15, -16, -17 -19, -21, -23	B4
-11613	-11, -12, -13 -14, -15, -25 -21, -22, -24	A6
-11614	-11, -13, -14 -15, -17, -12	B3
LDW280P 11321	-11, -13	C5

END ITEM & NO. REQD. SAME AS FOR LM-3 (33)

REWORK INFO.- DETAIL PARTS IN EXISTENCE MAY BE USED.

LFM

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	V	LCD2360 PKG32 SH 1

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE (5)
UPDATED LM-4 (34) REQ.	FOR DASH * ADDED LM-4 EFF, N/A LDW280-53096	VK 7/18/68

MODEL	EFFECTIVITY ~~PROCURING ACTIVITY NO.~~ E1	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM140	LM-4	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
V		NOT	REQ	DATE	7/11/68	7/12/68		7/10/68			7/13/68	7-17-68
REVISE DWG	RECORD EO	REWORK	SCRAP		VD1	~~SUPPORT~~ THEEM	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DWGS.	LEO 280	1051

ISSUED BY 5-63 H. TREFFEISEN x 7033 SECTION VD1 GROUP NO. 335 PL 25

01
NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW280-11125
EO NO. G3
CONTROL INFO NO. LDW 280B4334

IN F/D, B/M & M/B RESTRICT & CREATE THE DASH NO.'S NOTED
OLD DASH NO.'S SAME AS NEW DASH NO.'S EXCEPT AS NOTED
FOR OLD DASH NO. REMOVE LM-6 THRU LM-15 & FOR NEW DASH
NO. ADD LM-6 THRU LM-15

DASH NO. OLD	NEW DASH NO.	MAT'L THK	EFFECTIVITY
-13-1, -14-1, -34-1 -33-1, -31-1 & -25-1	-35, -36, -37, -38 -39 & -40 RESP.	.012 (WAS) .020	LM-6 THRU LM-15 (WAS LM-5 THRU LM-15)

SWIP

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☑	LCD 3179 PKG #4

REASON FOR EO: SWIP II

DESCRIPTION OF EO: IN F/D, B/M, M/B -35, -36, -37, -38, -39 & -40 REPLACED -13-1, -14-1, -34-1, -33-1, -31-1 & -25-1 RESPECTIVELY

GAEC EO RELEASE: JK (5)

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LM-6(36) THRU LM-15(45)		

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO ☐

DISPOSITION OF PARTS: REWORK ☐ SCRAP ✓

APPROVED BY								
DATE	8/7/68	8/7/68		8/7/68	8/7/68		8/16/68	8/16/68
	VDI	~~SUPPORT~~ THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: C

DRAWING TITLE: ANGLE A.S. ~ THERMAL SHIELD

DRAWING NO. LDW 280-11125

EO NO. G3

7-29-68
ISSUED BY P. FRANZESE X 7033 SECTION VDI GROUP NO. 335 PL 25

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NAS 9-1100

LDW280-11126 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM126	LDW 280-28096	LTA-8(18)	2
LEM	LDW 280-54096	LEM-15(45)	6
		LEM-14(44)	
		LEM-13(43)	
		LEM-12(42)	
		LEM-11(41)	
		LEM-10(40)	
		LEM-9(39)	
		LEM-8(38)	
		LEM-7(37)	
		LEM-6(36)	
		LEM-5(35)	
	LDW 280-54096	LEM-4(34)	
LEM	LDW280-53096	LEM-3(33)	6
LEM	LDW280-28096	LEM-2(32)	2
LEM	LDW280-28096	LEM-1(31)	2
LEM	LDW280-28096	LTA-8(18)	2
PART NO. LDW280-11126-19		GAEC SCH NO. 30	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28096	LEM-2(32)	1
LEM	LDW280-28096	LEM-1(31)	1
LDW280-11126-21			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28096	LEM-2(32)	5
LEM	LDW280-28096	LEM-1(31)	5
LEM	LDW280-28096	LTA-8(18)	6
PART NO. LDW280-11126-11		GAEC SCH NO. 30-	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54096	LM-15(45)	1 EA
		LM-14(44)	
		LM-13(43)	
		LM-12(42)	
		LM-11(41)	
		LM-10(40)	
		LM-9(39)	
		LM-8(38)	
		LM-7(37)	
		LM-6(36)	
		LM-5(35)	
	LDW280-54096	LM-4(34)	
LM	LDW280-53096	LM-3(33)	1 EA
PART NO LDW280-11126-17 & -18			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28096	LEM-2(32)	1 EA
LEM	LDW280-28096	LEM-1(31)	1 EA
LEM	LDW280-28096	LTA8(18)	1 EA
PART NO. LDW280-11126-13; 14, -15 & -16		GAEC SCH NO. 30-	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00					
REV	A		A	A					
SHEET	1.10								
REV	A								
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL^c INFO A	
LAST DASH NO. USED	-21	PRIM NO. 215	JK(601) MP-16A-4/24/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO.	NAS 9-1100	LINE ITEM #1	DOCUMENTATION TYPE II
DRAWN BY	I. SCOTT 5-1-66	RELIABILITY	
LAYOUT BY	DI JENNARO 5/9/66		
CHECKED BY	WCG 5/17/66		
GR LEADER	5/9		
VEH DES INT	5/9		
STRUCTURES	5/11	PROJ ENGR	5-19
STRUCTURES	Hilderman 5/12	REL GROUP	Botti 5-21-66
WEIGHTS	5/19		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE-CABIN THERMAL SHIELD (A)

SIZE	CODE IDENT NO.		
B	26512	LDW280-11126	A
SCALE	NONE	SHEET 1.00 OF 4	

REV A QDK 5-1-68

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
A	1	3.00	7B5D					E.O. A1	ON -13, -14, -15 & -16 DELETED (1) DRILL #40. ADDED SH 1.10	LTA-8 (18)	✓		BEN AZZARA 4-16-68		
	2	1.00						E.O. A2	ON -11; 6 REQD/MODULE WAS 10 REQD/MODULE. REMOVED -17 & -18	LEM-1 (31) LEM-2 (32)		✓ -11 -17 -18			
	3	1.00						E.O. A3	IN M/B ON -17, -18 & -19 ADDED N/A LDW280-53096	LM-3 THRU LM-15	NOT	REQD			
	4	1.00 2.00 3.00						E.O. A4	IN F/D, B/M & MOD BLK, CREATED -21. IN MOD BLK -11 NO. REQD/MOD (5) WAS (6) FOR LM-1 & LM-2.	LM-1 (31) LM-2 (32)		✓			
	5	1.00				✓		LEO280-899 LCD2360	FOR -17, -18 & -19 REVISED N/A WAS LDW280-53096 NOW LDW280-54096.	LM-4 THRU LM-15	NOT	REQD			
	6	1.00		LFM 126		✓		LCD1021-33	ON -19, FOR LTA-8 EFF ADDED LFM 126 REQUIREMENTS	LTA-8 (18)	NOT	REQD			
	7	1.00							REF E.O. A2 IN DESCRIPTION "WAS 10 REQD" SHOULD BE "WAS 1 REQD."	LM-1, LM-2 & LTA-8		✓ -11 -17 -18		4/23	4-24-68
	8					✓			Ⓑ REF E.O. A3 FOR -17 & -18 ADDED N/A LDW280-53096 S/B REINSTATED -17 & -18 N/A LDW280-53096 (-17 & -18 PREVIOUSLY REMOVED ON E.O. A2).	LM-3 THRU LM-15	NOT	REQD			

CHG APPROVED LTR	GROUP LDR	VD 1	STRUCT	STRUCT
A	4/17		4/23	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11126	A Ⓐ

SCALE NONE SHEET 1.10

ENG 77.16 3-66

0 1

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11126-21	E	BRACKET	AL ALLOY SH	QQ-A-355	2024	.040×2¼×2¾	T42	88	
		LDW280-11126-19	E	CLIP	AL ALLOY SH	QQ-A-355	2024-T3	.020×1¼×2¾	NONE	88	
		↑ -18	↑	CLIP	↑	↑	2024-T3	.020×1¾×2¾	NONE	↑	
		-17		CLIP			2024-T3	.020×1¾×2¾	NONE		
		-16		BRACKET			2024-T3	.050×6½×7⅞	NONE		
		-15		↑			2024	.050×6½×7⅞	T42		
		-14					2024	.050×6⅜×8⅜	T42		
		↓ -13	↓	↓	↓	↓	2024	.050×6⅜×8⅜	T42	↓	
		LDW230-11126-11	E	BRACKET	AL ALLOY SH	QQ-A-355	2024	.040×2¼×2¾	T42	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T42	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11126	A

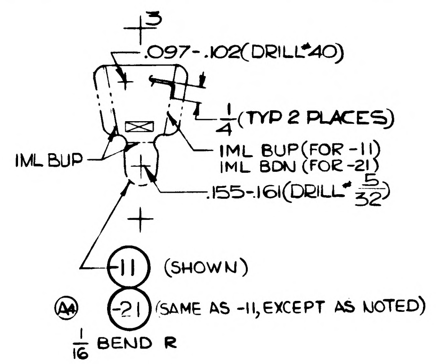
SCALE NONE

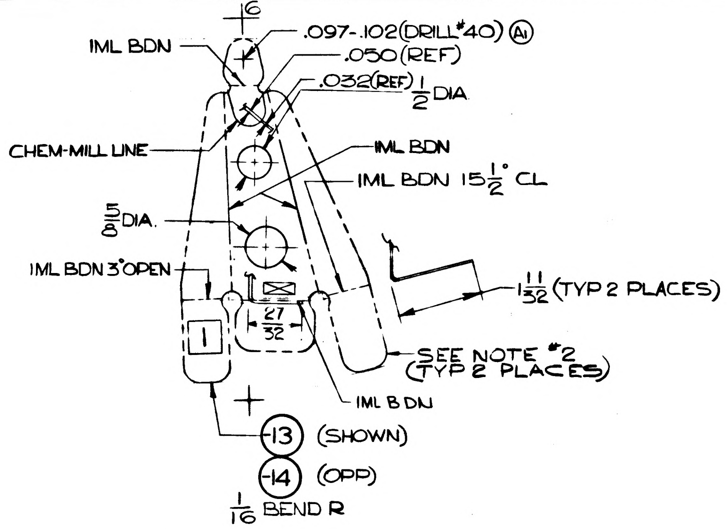
SHEET 2.00

ENG 77.2 7-65

01

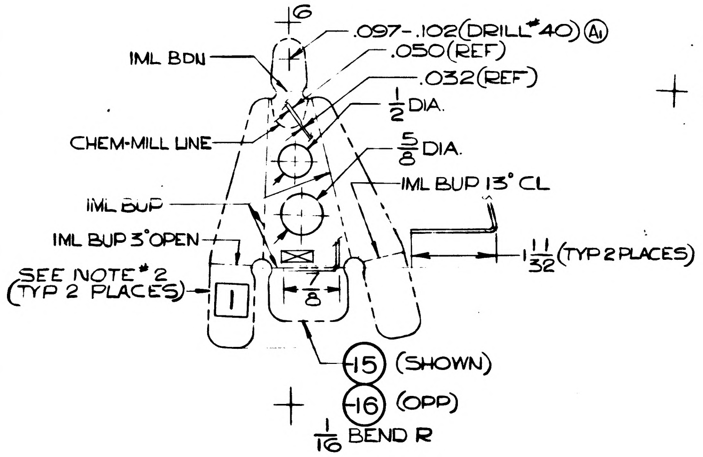
NAS 9-1100

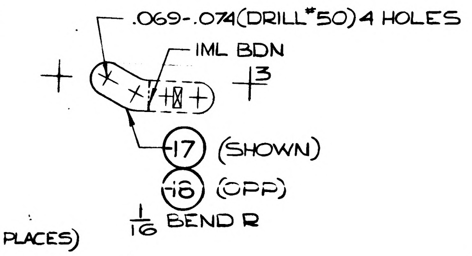

3
.097-.102(DRILL #40)
1/4 (TYP 2 PLACES)
IML BUP
IML BUP(FOR -11)
IML BDN (FOR -21)
.155-.161(DRILL # 5/32)
-11 (SHOWN)
A1 -21 (SAME AS -11, EXCEPT AS NOTED)
1/16 BEND R

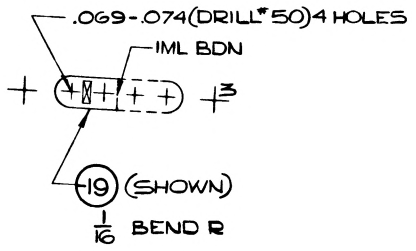

6
IML BDN
.097-.102(DRILL #40) A1
.050(REF)
.032(REF) 1/2 DIA
CHEM-MILL LINE
IML BDN
IML BDN 15 1/2° CL
5/8 DIA.
IML BDN 3° OPEN
27/32
1
1 11/32 (TYP 2 PLACES)
SEE NOTE #2 (TYP 2 PLACES)
IML BDN
-13 (SHOWN)
-14 (OPP)
1/16 BEND R

NOTES

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. -13-14-15 & -16 FLAT PATTERN DEVELOPED IN .032 THICKNESS EXCEPT AS SHOWN.


6
.097-.102(DRILL #40) A1
IML BDN
.050(REF)
.032(REF)
1/2 DIA.
CHEM-MILL LINE
5/8 DIA.
IML BUP 13° CL
IML BUP
IML BUP 3° OPEN
1 11/32 (TYP 2 PLACES)
SEE NOTE # 2 (TYP 2 PLACES)
1
7/8
-15 (SHOWN)
-16 (OPP)
1/16 BEND R


.069-.074(DRILL #50) 4 HOLES
IML BDN
3
-17 (SHOWN)
-18 (OPP)
1/16 BEND R


.069-.074(DRILL #50) 4 HOLES
IML BDN
3
-19 (SHOWN)
1/16 BEND R

LDW280-11126-13,-14,-15 & -16

CHEM-MILL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED).
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	.032±.005	.018(REF)
☐		
☐		

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
LEM	SIZE D	CODE IDENT NO. 26512	LDW280-11126	A
MODEL OR END ITEM	SCALE		SHEET 3.00	

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280 | EO NO. 1049
CONTROL INFO NO. LDW280-B4398

IN M/B REMOVE LM-4 (34) EFF. N/A LDW280-54096
FOR THE FOLLOWING DWGS:

DWG. NO.	DASH NO.	CHG. NO.
LDW280-11125	-13-1, -14-1, -25-1, -31-1, -33-1, -34-1	G1 ✓
11126	-17, -18, -19	B1 ✓
11127	-33-1, -34-1, -35, -37	E1
11131	-21, -31-1, -35-1, -37	D1
11612	-15-1, -16-1, -17-1 -19-1, -21-1, -23-1	B3
11613	-11, -12, -13, -14, -15 -21, -22, -24, -25	A5
11614	-11, -12, -13, -14 -15, -17	B2
12000	-1, -2, -3, -11, -12 -15	A1
12001	-1, -3, -11, -15	A1
12008	-11, -13	A6
LDW280-P11321	-11, -15	C4

01
NAS 9-1100

LFM

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD2360 PKG 32 SH 2 & 4 ⑤

REASON FOR EO: UPDATED LM-4 (34) REQ.

DESCRIPTION OF EO: REVISED EFF. DETAIL DWGS FOR N/A LDW280-54096

GAEC EO RELEASE: H.F 7/1/8

MODEL	EFFECTIVITY ~~PROCURING~~ ACTIVITY NO. E1	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 140	LM-4 (34)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK | SCRAP ✓

APPROVED BY	DATE	
VDI	7/11/68	
~~SUPPORT~~ THGRM	7/12/68	
RELIAB. GROUP		
GROUP LEADER	7/10/68	H.D. Rus
STRESS GROUP		
LIAISON ENGRG		
PROJ ENGRG	7/13/68	
~~CONT~~	7-17-68	

PRIORITY: C
DRAWING TITLE: SEE DWG.
DRAWING NO.: LEO 280
EO NO.: 1049

7-15-68
ISSUED BY H TREFFEISEN x7033 SECTION VDI GROUP NO. 335 PL 25

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO-280
EO NO. 1051
CONTROL INFO NO. LDW230B-4399

IN M/B ADD N/A LDW280-53096, EFF. LM-4 (34) TO THE FOLLOWING DWGS:

DWG. NO.	DASH NO.*	CHANGE NO.
LDW280 - 11124	-49, -50, -39, -45	E2 ✓
-11125	-13, -14, -33 -34, -31, -25	G2 ✓
-11126	-17, -18, -19	B2 ✓
-11127	-33, -34, -35, -39	E2
-11131	-21, -31, -35, -37	D2
-14344	-1	F1
-11612	-15, -16, -17 -19, -21, -23	B4
-11613	-11, -12, -13 -14, -15, -25 -21, -22, -24	A6
-11614	-11, -13, -14 -15, -17, -12	B3
LDW280P 11321	-11, -13	C5

END ITEM & NO. REQD. SAME AS FOR LM-3 (33)

REWORK INFO.- DETAIL PARTS IN EXISTENCE MAY BE USED.

LFM

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG V LCD2360 PKG 32 SH 1

(5)

GAEC EO RELEASE: 7/18/68

REASON FOR EO: UPDATED LM-4 (34) REQ.

DESCRIPTION OF EO: FOR DASH * ADDED LM-4 EFF, N/A LDW280-53096

MODEL	~~PROCURING ACTIVITY NO.~~ E1	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM140	LM-4	

DRAWING CHANGE REQD: V REVISE DWG / RECORD EO

DISPOSITION OF PARTS: NOT REWORK / REQ SCRAP

APPROVED BY								
DATE	7/11/68	7/12/68		7/10/68			7/13/68	7-17-68
	VDI	~~SUPPORT~~ THEEM	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONT~~

PRIORITY: C

DRAWING TITLE: SEE DWGS.

DRAWING NO.: LEO 280

EO NO.: 1051

'5-68

ISSUED BY: H. TREFFEISEN x 7033 SECTION: VD1 GROUP NO. 335 PL 25

01 NAS 9-1100

LDW280-11127 D

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53096	LM-3(33)	1

PART NO
LDW280-11127-33 & -34

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54096	LM-15(45)	1 EA
LM	LDW280-54096	LM-14(44)	1 EA
LM	LDW280-54096	LM-13(43)	1 EA
LM	LDW280-54096	LM-12(42)	1 EA
LM	LDW280-54096	LM-11(41)	1 EA
LM	LDW280-54096	LM-10(40)	1 EA
LM	LDW280-54096	LM-9(39)	1 EA
LM	LDW280-54096	LM-8(38)	1 EA
LM	LDW280-54096	LM-7(37)	1 EA
LM	LDW280-54096	LM-6(36)	1 EA
LFM 140	LDW280-54096	LM-5(35)	1 EA
LFM 140	LDW280-54096	LM-4(34)	1 EA

PART NO. LDW280-11127-33-1, -34-1, -35 & -39

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LFM126	LDW280-28096	LTA-8(18)	4
LM	LDW280-28096	LM-2(32)	2
LM	LDW280-28096	LM-1(31)	2
LM	LDW280-28096	LTA-8(18)	2

PART NO. LDW280-11127-17

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 126	LDW280-28096	LTA-8(18)	1
LM	LDW280-28096	LM-2(32)	1
LM	LDW280-28096	LM-1(31)	1
LM	LDW280-28096	LTA-8(18)	1

PART NO.
LDW280-11127-29

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LFM126	LDW280-28096	LTA-8(18)	1 EA
LM	LDW280-28096	LM-2(32)	1 EA
LM	LDW280-28096	LM-1(31)	1 EA
LM	LDW280-28096	LTA-8(18)	1 EA

PART NO. LDW280-11127-15, -19, -20, -31 & -37 — GAEC SCH NO. 30-

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	D	D	D	D					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO D		
LAST DASH NO. USED	-39	PRIM NO. 215	X(001) MP-16D-5/3/8	EMP

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100 — LINE ITEM #1 — DOCUMENTATION TYPE II

DRAWN BY	P.SCHELL 27 APRIL 66	RELIABILITY	
LAYOUT BY	DI JENNARO 5/3/66		
CHECKED BY	D.FASS 5-2-66		
GR.LEADER	G. Pusateri 5/3/66		
VEH.DES.INT	[illegible] 14		
STRUCTURES	[illegible] 5/5	PROJ ENGR	[illegible] 5-16-66
STRUCTURES	Hilderman 5/6	REL GROUP	A. Casamassa 5-21
WEIGHTS	[illegible] 5-16		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE~CABIN~THERMAL SHIELD

SIZE	CODE IDENT NO.		
B	26512	LDW280-11127	D

SCALE NONE — SHEET 1.00 OF 4

ENG 77.1 12-65

REV D CDR 5-1-68

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
A	1	1.00 1.10 3.00						ECA1	SH 1 OF 4 WAS SH 1 OF 3 ADDED SH 1.10. IN FLD FOR -19 & -20 ADDED IML BUP (2 PLACES) & IML BDN (2 PLACES)	LTA-8 LM-1 & -2	✓				
B	1	1.00 1.10 2.00 3.00						E.O. E1	REMOVED -11 & -13. ADDED -21 & -23	LM-1, -2, LTA-8		-11 -13	BODA 9-16-66		
C	1	1.00, 2.00 3.00	7D					EOC1	IN MODEL BLOCK ON -19 & -20 ADDED NEXT ASSY LDW280-53096 ADDED -25 & -27	LM-3 THRU LM-15	NOT	REQD	G. ZARCADOOLAS 1-14-66		
	2	1.00, 2.00 3.00	7D					EOC2	REMOVED -11 & -13, ADDED -29 & -31	LTA-8, LM-1 & LM-2		-11 & -13			
	3							EOC3	REF EOC2 - REMOVE -21 & -23 WAS REMOVE -11 & -13	LTA-8, LM-1 & LM-2		-21 & -23			
	4							EOC4	CANCELLED BY EOC5	NOT REQD	NOT	REQD			
	5							EOC5	CANCEL EOC4 & -33 & -35	LM-1 & LM-2		-33 & -35			
	6	1.00, 2.00 3.00	4B					EOC6	ADDED -37, REMOVED -15 (-37 REPLACES -15)	LTA-8, LM-1 & LM-2		-15			
	7							EOC7	REF EOC6 - -37 REPLACES -16 (WAS -15)	LTA-8, LM-1 & LM-2		-16			
	8	1.00 2.00, 3.00	4B 4E					EOC8	REMOVED LM-3 THRU LM-15 EFF & NEXT ASSY LDW280-53096 FROM -19 & -20 ADDED -33, -34, -35 & -37 & REMOVED -25 & -27	LM-3 THRU LM-15		-25, -27			
	9								NOT APPLICABLE (NOT ISSUED)	NOT REQD	NOT	REQD			
	10							LEO280-432	REF EOC8 - -39 WAS -37	LM-3 THRU LM-15	NOT	REQD			
D	1	1.00 1.10 2.00 3.00	5D	LFM 140		✓		EO-D1 LCD 2360	ADDED -33-1 & -34-1. REMOVED LM-4 THRU LM-15 EFF FROM -33 & -34. IN M/B N/A FOR -35 & -39 WAS LDW280-53096 EFF LM-4 THRU LM-15. -33-1 & -34-1 MAY BE MADE BY REWORKING -33 & -34 RESPECTIVELY.	LM-4(34) THRU LM-5(45)	✓		T. HOLLOWAY 20-APR-68		
	2	1.00 1.10		LFM126		✓		LCD1021-33	ADDED END ITEM LFM 26 TO -15, -17, -19, -20, -29, -31 & -37	LTA-8(18)	NOT	REQD			

LTR	GROUP LDR	VEH DESIGN	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY	THERMO				
A											
B											
C											
D	4/23	4-29-68									

APPROVED

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11127	D
SCALE NONE		SHEET 1.10	

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11127-34	E	STIFFENER	AL ALLOY SH	QQ-A-250/4	2024-T3	.020 x 2 3/4 x 5 7/8	NONE	58	
		LDW280-11127-33	E	STIFFENER	AL ALLOY SH	QQ-A-250/4	2024-T3	.020 x 2 5/8 x 5 7/8	NONE	58	
		LDW280-11127-39	E	ANGLE	AL ALLOY SH	QQ-A-250/4	2024	.020 x 7/8 x 5 7/8	T42	58	
		-37		ANGLE	AL ALLOY SH	QQ-A-250/4	2024-T3	.020 x [illegible]	NONE	58	
		-35		ANGLE	AL ALLOY SH	QQ-A-250/4	2024	.020 x [illegible]	T42	58	
		-34		STIFFENER	AL ALLOY SH	QQ-A-250/4	2024-T3	.020 x 2 5/8 x 5 7/8	NONE	58	
		-33		STIFFENER	AL ALLOY SH	QQ-A-250/4	2024-T3	.020 x 2 5/8 x 5 7/8	NONE	58	
		-3		ANGLE	AL ALLOY SH	QQ-A-250/4	2024	.020 x 7/8 x 5 7/8	T42	58	
		-19		ANGLE	AL ALLOY SH	QQ-A-250/4	2024	.020 x 7/8 x [illegible]	T42	58	
		-20		STIFFENER	AL ALLOY SH	QQ-A-250/4	2024-T3	.020 x 2 5/8 x 5 7/8	NONE	58	
		-9		STIFFENER	AL ALLOY SH	QQ-A-250/4	2024-T3	.020 x 2 3/4 x 5 7/8	NONE	58	
		-17		CLIP	AL ALLOY SH	QQ-A-250/4	2024-T3	.020 x 3/4 x 2 3/4	NONE	58	
		LDW280-11127-5	E	ANGLE	AL ALLOY SH	QQ-A-250/4	2024-T3	.020 x 7/8 x 2 3/4	NONE	58	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T42	AL HEAT TREAT	MIL-H-6088
58	ANODIZE	LSP 4-9030

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11127	D

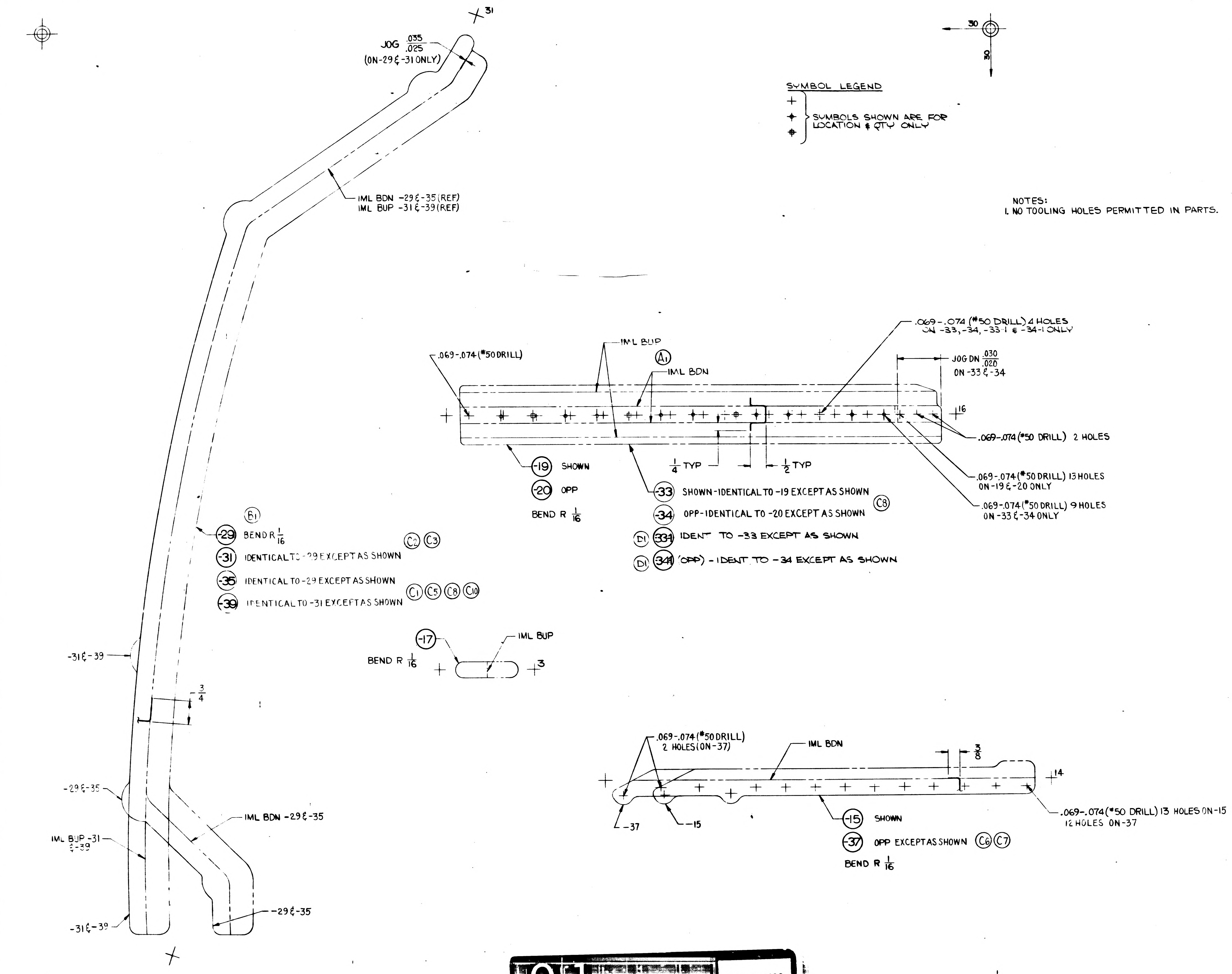
SCALE NONE

SHEET 2.00

ENG 772 7-65

01

NAS 9-1100


JOG .035/.025 (ON-29 & -31 ONLY)
IML BDN -29 & -35 (REF)
IML BUP -31 & -39 (REF)
SYMBOL LEGEND
SYMBOLS SHOWN ARE FOR LOCATION & QTY ONLY
30
.069-.074 (#50 DRILL)
IML BUP
A1
IML BDN
.069-.074 (#50 DRILL) 4 HOLES ON -33, -34, -33-1 & -34-1 ONLY
JOG DN .030/.020 ON -33 & -34
16
.069-.074 (#50 DRILL) 2 HOLES
-19 SHOWN
-20 OPP
BEND R 1/16
1/4 TYP
1/2 TYP
-33 SHOWN-IDENTICAL TO -19 EXCEPT AS SHOWN
-34 OPP-IDENTICAL TO -20 EXCEPT AS SHOWN
C8
D1 -33-1 IDENT TO -33 EXCEPT AS SHOWN
D1 -34-1 (OPP) - IDENT TO -34 EXCEPT AS SHOWN
.069-.074 (#50 DRILL) 13 HOLES ON -19 & -20 ONLY
.069-.074 (#50 DRILL) 9 HOLES ON -33 & -34 ONLY
B1
-29 BEND R 1/16
-31 IDENTICAL TO -29 EXCEPT AS SHOWN C2 C3
-35 IDENTICAL TO -29 EXCEPT AS SHOWN
-39 IDENTICAL TO -31 EXCEPT AS SHOWN C1 C5 C8 C10
-17
BEND R 1/16
IML BUP
3
-31 & -39
3/4
-29 & -35
IML BDN -29 & -35
IML BUP -31 & -39
-31 & -39
-29 & -35
31
.069-.074 (#50 DRILL) 2 HOLES (ON -37)
IML BDN
3/8
14
-37
-15
.069-.074 (#50 DRILL) 13 HOLES ON -15, 12 HOLES ON -37
-15 SHOWN
-37 OPP EXCEPT AS SHOWN C6 C7
BEND R 1/16

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD 10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

101 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

LM	SIZE E	CODE IDENT NO. 26512	LDW280-11127	D
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280
EO NO. 1049
CONTROL INFO NO. LDW280-B4398

IN M/B REMOVE LM-4(34) EFF. N/A LDW280-54096
FOR THE FOLLOWING DWGS:

DWG. NO.	DASH NO.	CHG. NO.
LDW280-11125	-13-1, -14-1, -25-1, -31-1, -33-1, -34-1	G1 ✓
11126	-17, -18, -19	B1 ✓
11127	-33-1, -34-1, -35, -39	E1 ✓
11131	-21, -31-1, -35-1, -37	D1
11612	-15-1, -16-1, -17-1 -19-1, -21-1, -23-1	B3
11613	-11, -12, -13, -14, -15 -21, -22, -24, -25	A5
11614	-11, -12, -13, -14 -15, -17	B2
12000	-1, -2, -3, -11, -12 -15	A1
12001	-1, -3, -11, -15	A1
12008	-11, -13	A6
LDW280-P11321	-11, -15	C4

01
NAS 9-1100

LFM

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD2360 PKG 32 SH 2 & 4 ⑤

REASON FOR EO: UPDATED LM-4 (34) REQ.

DESCRIPTION OF EO: REVISED EFF. DETAIL DWGS FOR N/A LDW280-54096

GAEC EO RELEASE: H.F 7/7/68

MODEL	~~PROCURING~~ ACTIVITY NO. E1	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 140	LM-4 (34)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK SCRAP ✓

		~~SUPPORT~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY	JaP	Dmh		HARu			JaP	JM
DATE	7/11/68	7/12/68		7/10/68			7/13/68	7-17-68
	VDI	THGKm						

PRIORITY: C
DRAWING TITLE: SEE DWG.
DRAWING NO.: LEO 280
EO NO.: 1049

7-15-68
ISSUED BY H TREFFEISEN x7033 SECTION VDI GROUP NO. 335 PL 25

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO-280 | EO NO. 1051
CONTROL INFO NO. LDW280B-4399

IN M/B ADD N/A LDW280-53096, EFF. LM-4 (34) TO THE FOLLOWING DWGS:

DWG. NO.	DASH NO.*	CHANGE NO.
LDW280 - 11124	-49, -50, -39, -45	E2
-11125	-13, -14, -33 -34, -31, -25	G 2
-11126	-17, -18, -19	B2
-11127	-33, -34, -35, -39	E 2
-11131	-21, -31, -35, -37	D2
-14344	-1	F1
-11612	-15, -16, -17 -19, -21, -23	B4
-11613	-11, -12, -13 -14, -15, -25 -21, -22, -24	A6
-11614	-11, -13, -14 -15, -17, -12	B3
LDW280P 11321	-11, -13	C5

END ITEM & NO. REQD. SAME AS FOR LM-3 (33)

REWORK INFO.- DETAIL PARTS IN EXISTENCE MAY BE USED.

LFM

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD2360 PKG32 SH 1 (5)

REASON FOR EO: UPDATED LM-4 (34) REQ.

DESCRIPTION OF EO: FOR DASH * ADDED LM-4 EFF, N/A LDW280-53096

GAEC EO RELEASE: C JK 7/18/68

MODEL	~~PROCURING ACTIVITY NO.~~ E1	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM140	LM-4	

DRAWING CHANGE REQD: V REVISE DWG ☐ RECORD EO

DISPOSITION OF PARTS: NOT REWORK REQ SCRAP

APPROVED BY								
DATE	7/11/68	7/12/68		7/10/68			7/13/68	7-17-68
	VD1	~~SUPPORT~~ THEEM	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONT~~

PRIORITY: C
DRAWING TITLE: SEE DWGS.
DRAWING NO.: LEO 280
EO NO.: 1051

ISSUED BY 1563 H. TREFFEISEN x 7033 SECTION VD1 GROUP NO. 335 PL 25

01 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11127
EO NO. E3
CONTROL INFO NO. LDW280B5079

IN F/D, B/M & M/B RESTRICT & CREATE THE DASH NO.'S NOTED
OLD DASH NO.'S SAME AS NEW DASH NO.'S EXCEPT AS NOTED
FOR OLD DASH NO. REMOVE LM-6 THRU LM-15 & FOR NEW DASH NO. ADD LM-6 THRU LM-15

DASH NO. OLD	NEW DASH NO.	MAT'L THK	EFFECTIVITY
-33-1, -34-1, -35 & -39	-41, -42, -43 & -44	.012 (WAS) .020	LM-6 THRU LM-15 FOR -33-1 & -34-1 WAS LM5 THRU LM15 FOR -35 & -39 WAS LM-4 THRU LM15

SWIP

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☑ LCD 3179 PKG #4

REASON FOR EO: SWIP II

DESCRIPTION OF EO: IN F/D, B/M, M/B -41, -42, -43 & -44 REPLACED -33-1, -34-1, -35 & -39 RESPECTIVELY

GAEC EO RELEASE: JK 9/11/[illegible]

MODEL	EFFECTIVITY PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LM-6(36) THRU LM-15(45)		

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK SCRAP ✓

APPROVED BY	MMR		FR				
DATE	8/7/68	8/7/68		8/7/68	8/8/68		8/8/68	8-16-68
VDI	~~SUPPORT~~ THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C
DRAWING TITLE: ANGLE A.S. CABIN ~ THERMAL SHIELD
DRAWING NO. LDW280-11127
EO NO. E3

ISSUED BY 7-29-68 P. FRANZESE X 7033
SECTION VDI
GROUP NO. 335 PL 25

01 NAS 9-1100

LDW280-11129 E

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 126	LDW280-28241	LTA-8(18)	1 EA
LM	LDW280-54241	LM-15(45)	1 EA
		LM-14(44)	
		LM-13(43)	
		LM-12(42)	
		LM-11(41)	
		LM-10(40)	
		LM-9(39)	
		LM-8(38)	
		LM-7(37)	
		LM-6(36)	
		LM-5(35)	
	LDW280-54241	LM-4(34)	
	LDW280-53241	LM-3(33)	
	LDW280-28241	LM-2(32)	
	LDW280-28241	LM-1(31)	
LM	LDW280-28241	LTA-8(18)	1 EA

PART NO. LDW 280-11129-21, 23, & -25 | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54241	LM-15(45)	1 EA
		LM-14(44)	
		LM-13(43)	
		LM-12(42)	
		LM-11(41)	
		LM-10(40)	
		LM-9(39)	
		LM-8(38)	
		LM-7(37)	
		LM-6(36)	
		LM-5(35)	
	LDW280-54241	LM-4(34)	
LM	LDW280-53241	LM-3(33)	1 EA

PART NO. LDW280-11129-29 & -30 | GAEC SCH NO. 30

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54241	LM-15(45)	1 EA
		LM-14(44)	
		LM-13(43)	
		LM-12(42)	
		LM-11(41)	
		LM-10(40)	
		LM-9(39)	
		LM-8(38)	
		LM-7(37)	
		LM-6(36)	
		LM-5(35)	
	LDW280-54241	LM-4(34)	
LM	LDW280-53241	LM-3(33)	1 EA

PART NO. LDW 280-11129-31 & -33

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 126	LDW280-28241	LTA-8(18)	1 EA
LM	LDW280-28241	LM-2(32)	1 EA
LM	LDW280-28241	LM-1(31)	1 EA
LM	LDW280-28241	LTA-8(18)	1 EA

PART NO. LDW 280-11129-11, -19, -20 & -27 | GAEC SCH NO. 30

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	1.11	2.00	3.00					
REV	E	E	E	E	E					
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO E	
LAST DASH NO. USED	-33	PRIM NO. 215	K001 MP-16E-9-1-69 CMI

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	AUGELLO 4-26-66	THERMO	III Tow 6/1/66
LAYOUT BY	SHANLEY		
CHECKED BY	EG 5-3-66	WEIGHTS	A Rob 5-16
GR. LEADER	J. Pirestan 5/4/66		
VEH DES.	5/4		
STRUCT	5/6	PROJ ENGR	Plunkett 2 Jun 66
STRUCT	Hakkinen 5/6	REL GROUP	Bott 6-6-66
RELIABILITY			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE ~ CABIN
FRONT FACE LOWER SHIELD

SIZE B | CODE IDENT NO. 26512 | LDW280-11129 | E
SCALE NONE | SHEET 1.00 OF 5

REV "E" CDR 5-22-69

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~[illegible]~~ APPD
A	1	1.00 2.00 3.00							IN F/D, L/M & M/B. REMOVED -15, ADDED -21.	LTA-8 LEM-1 & -2		✓	SHANLEY 6-28-66		
	2								SHEET 1.00 OF 4 WAS SHEET 1 OF 3. ADDED SHEET 1.10.						
B	1	2.00 3.00							REVISED SHAPE OF -19, -20. IN L/M FOR -19 & -20: STOCK SIZE .020×3½×1⅝ WAS .020×4⅛×1⅝.	LTA-8 LEM-1 & -2	✓		SHANLEY 8-29-66		
C	1	1.00						EO C1	CREATED -23 & -25 REMOVED -17	LTA-8, LM-1 & -2		✓	BRIDA 12-21-66		
D	1	1.10 2.00 3.00						EOD1	IN FIELD, B/M & MOD BLOCK CREATED -27 REM -13			-13			
	2								ADDED -29 & -30	LM-3 THRU LM-15	NOT	REQD			
E	1	1.00						LEO 280-428	FOR -11, -13, -17 & -21 ADDED LM-3 THRU LM-15 EFFECTIVITY	LM-3(33) THRU LM-15(45)	NOT	REQ'D			
	2	1.00						E.O. E2	FOR -23, -25 & 27 ADDED N/A LDW280-53241		NOT	REQ'D			
	3	1.00 3.00					✓	E.O. E3	TRIMMED -11	LM-1(31) LM-2(32)	✓				
	4	3.00 2.00 1.00					✓	E.O. E4	ADDED -31 RESTRICTED -11 (DELETED LM3-15) ADDED -33 RESTRICTED -27 (DELETED LM3-15)	LM-3(33) THRU LM-15(45)		-11 -27			
	5	1.00		LFM 140		✓		LEO-280-917 LCD 2360	FOR -21, -23 -25, -29 -30, -31 & -33 FOR LM-4 THRU LM-15: NEXT ASSEMBLY LDW 280-54241 WAS LDW 280-53241.	LM-4(34) LM-5(35) LM-6(36) THRU LM-15(45)	NOT	REQ'D			
	6	1.00							REF. LEO. 280-428 (FOR -11, -13, -17 & -21 SHOULD BE FOR -11, -21) REF C1 & D1 CHG	LM-3(33) THRU LM-15(45			M. SARFATY 4/29/61		

CHG APPROVE LTR	GROUP LDR	SUBSYS ENGR		STRUCT	STRUCT		WEIGHTS	RELIABLITY	THERMO		
-											
E	DK ZNK 5/6/68										

FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11129	E

SCALE NONE | SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ________

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~[illegible]~~ APPD
											REWORK	SCRAP			
E	7	1.00					✓		REF E.O. E3 EFFECTIVITY LM-1(31) & LM-2(32) SHOULD BE LTA-8(18) & LM-1(31) THRU LM-15(45). ADDED SH 1.11	LTA-8, LM-1 THRU LM-15(45)	NOT	REQ'D	M. SAFATY 4/29/68	5/8	5/4/68
	8	1.00		LFM 126		✓		LCD 1021-33	ON -11, -19, -20, -21, -23, -25 & -27 ADDED END ITEM LFM 126 REQ'MTS.	LTA-8(18)	NOT	REQ'D			

CHG APPROVED LTR	GROUP LDR	VDI	STRUCT	STRUCT	THERMO
E	FDR	5/7/68	5/1/68		5/4/68

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11129	E

SCALE NONE SHEET 1.11

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11129-33	E	ANGLE	AL ALLOY SH	Q-Q-A-250/4	2024-T3	.020x2x13	NONE	76	
		LDW280-11129-31	E	ANGLE	AL ALLOY SH	Q-Q-A-250/4	2024-T3	.020x3x9	NONE	76	
		LDW280-11129-30	E	ANGLE	ALALLOY SH	QQ-A-250/4	2024-T3	.020x2x4	NONE	76	
		-29				QQ-A-250/4	2024-T3	.020x2x4		76	
		-25				QQ-A-250/5	SEE NOTE 2	.020x10x35		NOTE 3&4	
		-23				QQ-A-250/5	SEE NOTE 2	.020X2x11		NOTE3&4	
		-21				QQ-A-250/5	SEE NOTE 2	.020x5x31⅜		NOTE 3&4	
		-20				QQ-A-250/4	2024-T3	.020X3½x1⅝		76	
		-19				QQ-A-250/4	2024-T3	.020X3½x1⅝		76	
		-27				QQ-A-250/4	2024-T3	.020X1⅝X1½		76	
		LDW280-11129-11	E	ANGLE	AL.ALLOY SH.	QQ-A-250/4	2024-T3	.020X2¼X9	NONE	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						76	ALODINE	LSP 14-9010

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11129	E

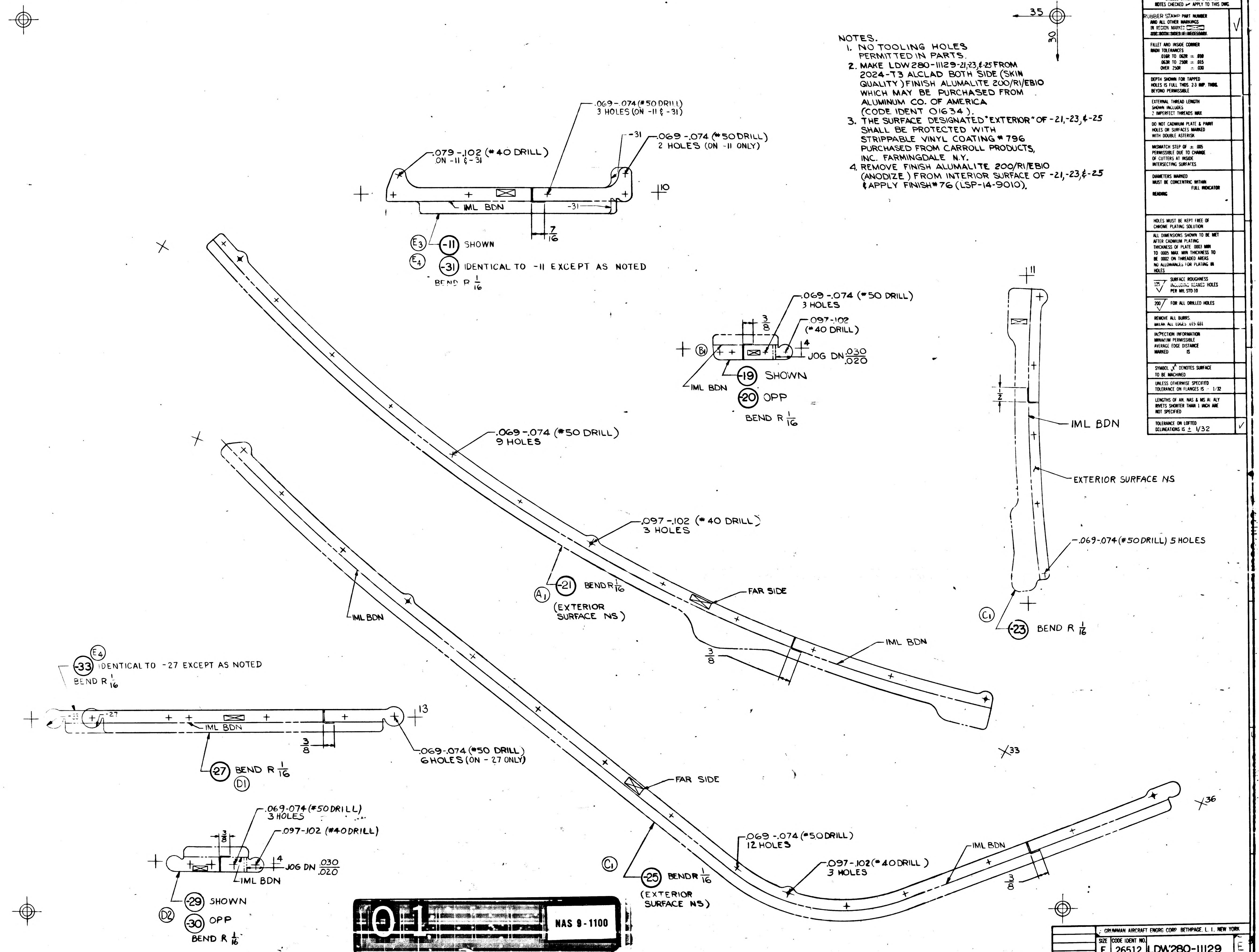
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



8
7
6
5
4
3
2
1
TRAM WCG
35
30
.069-.074 (#50 DRILL)
3 HOLES (ON -11 & -31)
-31
.069-.074 (#50 DRILL)
2 HOLES (ON -11 ONLY)
.079-.102 (#40 DRILL)
ON -11 & -31
IML BDN
-31
10
7/16
E3
-11 SHOWN
E4
-31 IDENTICAL TO -11 EXCEPT AS NOTED
BEND R 1/16
.069-.074 (#50 DRILL)
3 HOLES
3/8
.097-.102
(#40 DRILL)
B1
4
JOG DN .030/.020
IML BDN
-19 SHOWN
-20 OPP
BEND R 1/16
.069-.074 (#50 DRILL)
9 HOLES
.097-.102 (#40 DRILL)
3 HOLES
A1
-21 BEND R 1/16
(EXTERIOR SURFACE NS)
FAR SIDE
IML BDN
3/8
IML BDN
11
1/2
IML BDN
EXTERIOR SURFACE NS
.069-.074 (#50 DRILL) 5 HOLES
C1
-23 BEND R 1/16
E4
-33 IDENTICAL TO -27 EXCEPT AS NOTED
BEND R 1/16
-27
IML BDN
13
3/8
.069-.074 (#50 DRILL)
6 HOLES (ON -27 ONLY)
-27 BEND R 1/16
D1
FAR SIDE
33
36
.069-.074 (#50 DRILL)
3 HOLES
3/8
.097-.102 (#40 DRILL)
4
JOG DN .030/.020
IML BDN
D2
-29 SHOWN
-30 OPP
BEND R 1/16
C1
-25 BEND R 1/16
(EXTERIOR SURFACE NS)
.069-.074 (#50 DRILL)
12 HOLES
.097-.102 (#40 DRILL)
3 HOLES
IML BDN
3/8
Q1
NAS 9-1100

NOTES.
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. MAKE LDW280-11129-21,-23,&-25 FROM 2024-T3 ALCLAD BOTH SIDE (SKIN QUALITY) FINISH ALUMALITE 200/R1/EB10 WHICH MAY BE PURCHASED FROM ALUMINUM CO. OF AMERICA (CODE IDENT 01634).
3. THE SURFACE DESIGNATED "EXTERIOR" OF -21,-23,&-25 SHALL BE PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROLL PRODUCTS, INC. FARMINGDALE N.Y.
4. REMOVE FINISH ALUMALITE 200/R1/EB10 (ANODIZE) FROM INTERIOR SURFACE OF -21,-23,&-25 & APPLY FINISH #76 (LSP-14-9010).

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
L M	E	26512	LDW280-11129	E
	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION 1

EMS 73-4 6-64

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 1038
CONTROL INFO NO. LM-3-6292.

FOR NOTED DASH NUMBERS OF DRAWINGS LISTED BELOW CHANGE MATERIAL TO 2024T3 AL. ALLOY CLAD SHT. QQ-A-250/5. IN FINISH COLUMN ADD "SEE NOTE *".

ADD NOTE * "FINISH PER LDW 280-11367"

DRAWING NO.	DASH NO Δ	CHG.	TITLE
LDW280-11129	-21	F/ ✓	ANGLE - A.S.-M.S. - THERMAL SHIELD
LDW280-11745	-17,-21,-22	A7	SHIELD ASSY - AS.-M.S. - THERMAL
LDW280-11753	-19	A5	" " " " "
LDW280-54952	-11	A2	PANEL ASSY - A.S.-M.S. - THERMAL
LDW280-54460	-13, -19	A2	SKIN ASSY - A.S.-M.S. - THERMAL
LDW280-54945	-11, -12	A2	PANEL ASSY - A.S.-M.S. - THERMAL
LDW280-54960	-13	A2	SKIN ASSY - A.S.-M.S. - THERMAL

③

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

REASON FOR EO: FACILITATE PRODUCTION. (PROVIDE EQUIVALENT MATERIAL)

DESCRIPTION OF EO: REVISED MATERIAL FOR DASH NUMBERS Δ 2024T3 QQ-A-250/5 FINISH PER LDW280-11367 WAS ALUMALITE. ADDED NOTE *

GAEC EO RELEASE: C HF

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-4 (34)	
		THRU	
		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK SCRAP — NOT REQD

APPROVED BY								
DATE	7/16/68	7/13/68		—	7-12-68	7-12-68	7/16/68	7-13-68
	VDI	~~SUPPORT~~ THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	SEVT

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LEO 280
EO NO.: 1038

ISSUED BY VPE / VIC BOLLO X2151 SECTION VDI GROUP NO. 280 PL 25

01
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW280-11129		EO NO. F2	
CONTROL INFO NO. LDW280B 4242			

IN F/D, LM & M/B CREATE -35, -37 & -39 FOR LM-6(36) thru LM-15 (45)
RESTRICT -21, -23, & -25 TO LTA-8, LM-1(31) thru LM-5 (35)

-35, -37 & -39 SAME AS -21, -23 & -25 RESPECTIVELY EXCEPT
MAT'L IS 2024T3 CLAD (WAS SEE NOTE #2)
FINISH IS "SEE NOTE *" (WAS "NOTE 3 & 4)

NOTE * "MATERIAL TO BE PRE-FINISHED PER LEI 280-015.
SURFACE DESIGNATED "EXTERIOR" TO BE PROTECTED
WITH STRIPPABLE VINYL COATING #796 PURCHASED
FROM CARROLL PRODUCTS INC., FARMINGDALE, N.Y."

SWIP

T&T = E

* USE NEXT APPROPRIATE NOTE NUMBER

(5)

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☒ LCD 3179 PKG. 3

REASON FOR EO: SWIP II

DESCRIPTION OF EO:
IN F/D, LM & M.B.
CREATED -35, -37 & -39 FOR LM-6(36) thru LM-15(45)
RESTRICTED -21, -23 & -25 TO LTA-8(18), LM-1(31) thru LM-5(35)
& ADDED NOTE *

GAEC EO RELEASE: JK 7/18/68

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-6(36)	
LM		thru	
LM		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK SCRAP ✓

APPROVED BY	Jap	Sink		F.Rus			Jap	Bauman
DATE	7/12/68	7/12/68		7/11/68	7/11/68		7/16/68	7-18-68
	VD1	~~SUPPORT~~ THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: C
DRAWING TITLE: ANGLE ~ ASCENT STAGE ~ CABIN FRONT FACE LOWER SHIELD
DRAWING NO.: LDW280-11129
EO NO.: F2

7-18-68
ISSUED BY P. FRANZESE x7033 SECTION VD1 GROUP NO. 335 PL 25

0 1

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW280-11129 EO NO. F3
CONTROL INFO NO. LM-2-4905

THIS IS A REVISION OF EO F2

REVISE NOTE ✱ AS FOLLOWS:

WAS:
MATERIAL TO BE PREFINISHED PER LEI 280-015. SURFACE
— — — — — — — FARMINGDALE N.Y.

S/B:
FINISH #88 PER LSP-14-9030 EXCEPT ANODIZE TIME TO
BE 60 MIN. SURFACE — — — — — — — — — — —
— — — FARMINGDALE N.Y.

DESCRIPTION OF EO CONT'D
FINISHED PER LEI 280-015

DETAIL SPEC REQ ☐	CL II ENGRG CHG ☐	CL I ENGRG CHG ☒	LCD 3179 PKG. 3 ⑵

REASON FOR EO: SWIP II (TO REMOVE EMMISIVITY REQMTS & CHANGE HEAT TREAT SEQ)

DESCRIPTION OF EO: REF EO F2 FINISH #88 PER LSP-14-9030 EXCEPT ANODIZE TIME TO BE 60 MIN. WAS-MAT'L TO BE PRE-

GAEC EO RELEASE: VK

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-6 (36) THRU LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK ✓ SCRAP

APPROVED BY								
DATE	8/24	8/16/68		Z	8-16-68	8/16/68	8/24	8-16-68
	VDI	~~SUPPORT~~ THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONT~~

PRIORITY: C
DRAWING TITLE: ANGLE A/S CABIN FRONT FACE LOWER SHIELD
DRAWING NO.: LDW280-11129
EO NO.: F3

ISSUED BY LIAISON John J. BLase X3604 SECTION VDI GROUP NO. 335 PL 25

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NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW 280-11129 | EO NO. F4
CONTROL INFO NO. LDW 280B5689

IN MODEL BLOCK

RESTRICT -33 N/A LDW280-53241 EFF. LM-3(33)
N/A LDW280-54241 EFF. LM-4(34) & LM-5(35)
(WAS) EFF. LM-4(34) THRU LM-15(45)

FOR THE FOLLOWING DASH NO.'s FOR LM-6(36) THRU LM-15(45)
CHANGE N/A TO LDW 280-56241 (WAS) LDW 280-54241
FOR -29, -30, -35, -37 & -39

FOR -31 EFF. FOR LM-6(36) THRU LM-15(45) CHANGE
N/A TO LDW 280-56980 (WAS) LDW280-54241

DETAIL SPEC REQ ☐ | CL II ENGRG CHG ☐ | CL I ENGRG CHG ✓ | L.C.D. 3179 PKG. 4 PAGE 4 ⑤

REASON FOR EO: SWIP II

DESCRIPTION OF EO:
IN MODEL BLOCK
RESTRICTED -33 (WAS) EFF. LM-3 N/A LDW280-53241 &
N/A LDW280-54241 EFF. LM-4 THRU LM-15
CHANGED N/A FOR -29, -30, -31, -35 & -39 (WAS) LDW280-54241

GAEC EO RELEASE: C HF 10/10/8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-6(36) THRU LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK | SCRAP ✓

APPROVED BY								
DATE	10/1/68	10/2/68		10/1/68	10/		10/3/68	10-16-68
	VDI	~~SUPPORT~~ THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C
DRAWING TITLE: ANGLE A/S CABIN FRONT FACE LOWER SHIELD
DRAWING NO.: LDW280-11129
EO NO.: F4

11/1/68
ISSUED BY P.J. DELIA / X-7033 SECTION V.D.I. GROUP NO. 335 PL 25

01
NAS 9-1100

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO LEO 280 | EO NO. 1824
CONTROL INFO NO. LDW280B9664

IN MODEL BLOCK DELETE THE QTY'S ** FOR LM-10(40) THRU LM-14(44) EFF. ON THE FOLLOWING DWG'S, FOR DASH No's *

Dwg. No	Dash No's *	QTY'S **	CHG. No	Title	Next Assy
LDW280-10772	-53, -55, -57, -61	ALL	H2	See Dwg	LDW280-56241
↑ -11129	-29	ALL	F5	↑	↑ -56241
-11745	-31, -35, -41	ALL	C2		-56241
-11692	-17	1 of 4	B2		-53178
-11693	-13	ALL	A3		↑
-11694	-15	ALL	A2		
-11696	-11	ALL	A4		
-11696	-13	2 of 4			
↓ -11696	-17, -19	ALL		↓	↓ ↓
LDW280-11697	-11	All	B2	SEE DWG	LDW280-53178

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD 3994 PKG 13 (5)

REASON FOR EO
PARTS NOT REQD FOR LM-10(40) THRU LM-14(44)

DESCRIPTION OF EO
IN M/B DELETED THE QTY'S ** FOR LM-10(40) THRU LM-14(44) EFF FOR DASH No's *

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-10(40)	
		THRU	
		LM-14(44)	

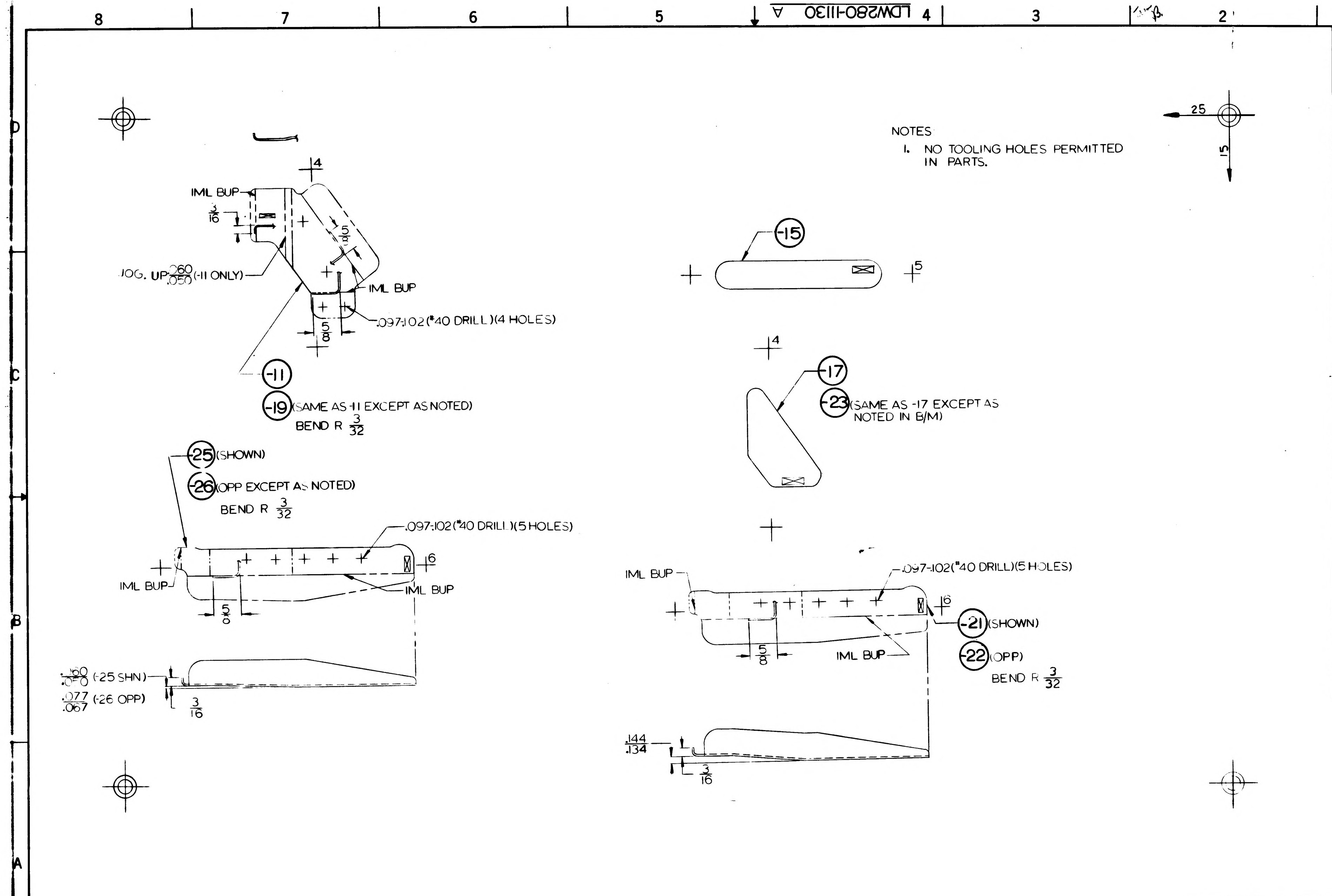
DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK SCRAP ✓

APPROVED BY								
DATE	1-13-70			1-12-70	1/16/70		1/16/70	1/27/70
	YDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY C
DRAWING TITLE SEE DWG
DRAWING NO. LEO 280
EO NO. 1824

013070
ISSUED BY J. LOWNE 1-12-70 X-86048
SECTION VDI
GROUP NO. 335 PL 25

01 NAS 9-1100


IML BUP
3/16
JOG. UP .060/.050 (-11 ONLY)
4
5/8
IML BUP
.097-.102 (#40 DRILL) (4 HOLES)
5/8
-11
-19 (SAME AS -11 EXCEPT AS NOTED)
BEND R 3/32
-25 (SHOWN)
-26 (OPP EXCEPT AS NOTED)
BEND R 3/32
.097-.102 (#40 DRILL) (5 HOLES)
6
IML BUP
IML BUP
5/8
.060/.050 (-25 SHN)
.077/.067 (-26 OPP)
3/16
-15
5
4
-17
-23 (SAME AS -17 EXCEPT AS NOTED IN B/M)
25
15
IML BUP
.097-.102 (#40 DRILL) (5 HOLES)
6
-21 (SHOWN)
-22 (OPP)
BEND R 3/32
5/8
IML BUP
.144/.134
3/16

NOTES
1. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

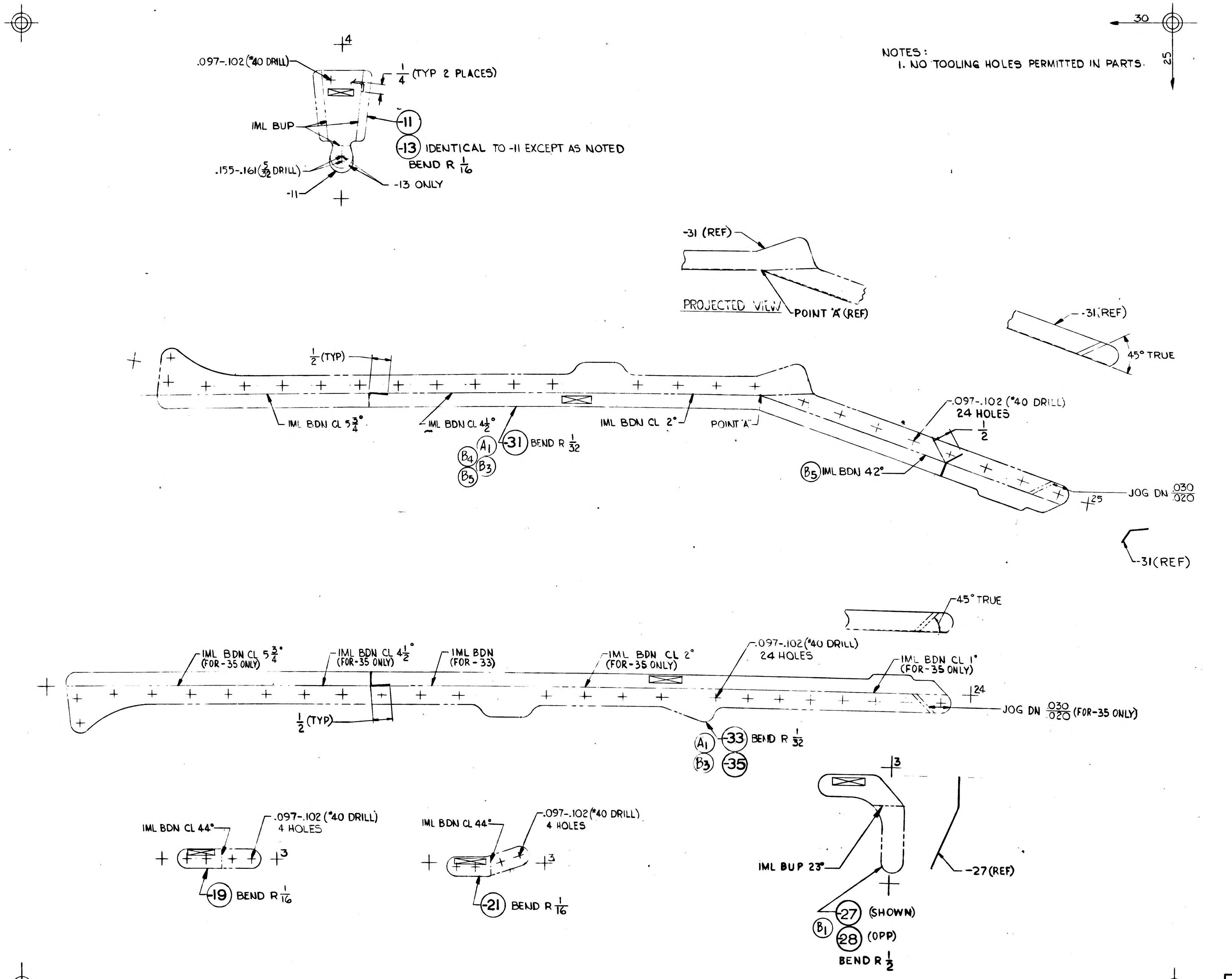
MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	D	26512	LDW280-11130	A
	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.



.097-.102 (#40 DRILL)
1/4 (TYP 2 PLACES)
IML BUP
-11
-13 IDENTICAL TO -11 EXCEPT AS NOTED
BEND R 1/16
.155-.161 (5/32 DRILL)
-13 ONLY
-11
-31 (REF)
PROJECTED VIEW
POINT 'A' (REF)
-31 (REF)
45° TRUE
1/2 (TYP)
IML BDN CL 5 3/4°
IML BDN CL 4 1/2°
IML BDN CL 2°
POINT 'A'
A1
-31
BEND R 1/32
B4
B3
B5
.097-.102 (#40 DRILL)
24 HOLES
1/2
B5 IML BDN 42°
JOG DN .030/.020
25
30
-31 (REF)
45° TRUE
IML BDN CL 5 3/4° (FOR-35 ONLY)
IML BDN CL 4 1/2° (FOR-35 ONLY)
IML BDN (FOR-33)
IML BDN CL 2° (FOR-35 ONLY)
.097-.102 (#40 DRILL)
24 HOLES
IML BDN CL 1° (FOR-35 ONLY)
24
JOG DN .030/.020 (FOR-35 ONLY)
1/2 (TYP)
A1
-33
BEND R 1/32
B3
-35
IML BDN CL 44°
.097-.102 (#40 DRILL)
4 HOLES
3
-19
BEND R 1/16
IML BDN CL 44°
.097-.102 (#40 DRILL)
4 HOLES
3
-21
BEND R 1/16
3
IML BUP 23°
-27 (REF)
B1
-27 (SHOWN)
-28 (OPP)
BEND R 1/2

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

LEM	SIZE F	CODE IDENT NO. 26512	LDW280-11131	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

01 NAS 9-1100

LFM126	LDW280-28096	LTA-8(18)	1
LM	LDW280-28096	LM-2(32)	1
LM	LDW280-28096	LM-1(31)	1
LM	LDW280-28096	LTA-8(18)	1

PART NO.
LDW280-11131-19

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM126	LDW280-28096	LTA-8(18)	1
LM	LDW280-54096	LM-15(45)	1
		LM-14(45)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9 (39)	1
		LM-8 (38)	1
		LM-7 (37)	1
		LM-6(36)	1
		LM-5 (35)	1
	LDW280-54096	LM-4(34)	1
	LDW280-53096	LM-3(33)	1
	LDW280-28096	LM-2 (32)	1
	LDW280-28096	LM-1(31)	1
LM	LDW280-28096	LTA-8(18)	1

PART NO. LDW280-11131-21 | GAEC SCH NO.

LDW280-11131 C

LFM

LM	LDW280-53096	LM-3 (33)	1
LM	LDW280-28096	LM-2 (32)	1
LM	LDW280-28096	LM-1 (31)	1

PART NO. LDW280-11131-35

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM126	LDW280-28096	LTA-8(18)	1
LM	LDW280-28096	LTA-8(18)	1

PART NO. LDW280-11131-33 | GAEC SCH NO.

LFM126	LDW280-28096	LTA-8(18)	1
LM	LDW280-53096	LM-3(33)	1
	LDW280-28096	LM-2(32)	1
	LDW280-28096	LM-1(31)	1
LM	LDW280-28096	LTA-8(18)	1

PART NO.
LDW280-11131-31

LM	LDW280-28096	LM-2(32)	6
LM	LDW280-28096	LM-1(31)	6
LM	LDW280-28096	LTA-8(18)	6

PART NO. LDW280-11131-11

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM126	LDW280-28096	LTA-8(18)	1 EA
LEM	LDW280-28096	LEM-2(32)	1 EA
LEM	LDW280-28096	LEM-1(31)	1 EA
LEM	LDW280-28096	LTA-8(18)	1 EA

PART NO LDW280-11131-27 & -28 | GAEC SCH NO. 30-

FOR ADDITIONAL USAGE INFORMATION SEE SH 1.01 5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	C	C	C	C
SHEET	1.01			
REV	C			
SHEET				
REV				

LAST SECT LTR USED
LAST DASH NO. USED -37
GRUMMAN REL INFO C
PRIM NO. 215 K(001) IMP-160 3/3/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # I
DOCUMENTATION TYPE II

DRAWN BY	DAGOSTO 5-3-66	RELIABILITY	
LAYOUT BY	DI JENNARO 5-7-66		III Tamb 4-26-66
CHECKED BY	AMATULI 5-4-66		
GR. LEADER	C Puartin 5/7/66		
VEH DES INT	5/9		
STRUCTURES	5/6	PROJ ENGR	5-16
STRUCTURES	Alderman 5/11	REL GROUP	5-11
WEIGHTS	5-12		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE-CABIN-THERM-SHIELD

SIZE B | CODE IDENT NO. 26512 | LDW280-11131 | C
SCALE NONE | SHEET 1.00 OF 5

ENG 77.1 12-65

REV "C" CDR 5-7-63

01

NAS 9-1100

LDW280-11131 C

PART NO. LDW280-11131-13

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28096	LM-2(32)	1
LM	LDW280-28096	LM-1(31)	1
LM	LDW280-28096	LTA-8(18)	1
GAEC SCH NO.			

PART NO. LDW280-11131-37

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54096	LM-15(45)	1
		LM-14(44)	
		LM-13(43)	
		LM-12(42)	
		LM-11(41)	
		LM-10(40)	
		LM-9(39)	
		LM-8(38)	
		LM-7(37)	
		LM-6(36)	
		LM-5(35)	
	LDW280-54096	LM-4(34)	
LM	LDW280-53096	LM-3(33)	1
GAEC SCH NO.			

PART NO. LDW280-11131-31-1 & -35-1

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54096	LM-15(45)	1 EA
		LM-14(44)	
		LM-13(43)	
		LM-12(42)	
		LM-11(41)	
		LM-10(40)	
		LM-9(39)	
		LM-8(38)	
		LM-7(37)	
LM		LM-6(36)	
LFM140		LM-5(35)	
LFM140	LDW280-54096	LM-4(34)	1 EA
GAEC SCH NO.			

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET									
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED

GRUMMAN REL INFO

PRIM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO.

LINE ITEM

DOCUMENTATION TYPE

DRAWN BY

LAYOUT BY

CHECKED BY

PROJ ENGR

REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11131	C
SCALE	NONE	SHEET 1.01	OF

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
A	1	1.00, 1.10 2.00, 3.00						EO A1	SH 1.00 OF 4 WAS SH 1.00 OF 3. ADDED SH 1.10 REMOVED -15 & -17; ADDED -23 & -25.	LTA-8 LEM-1, -2		-15 -17	HERC/RG 7-27-66		
B	1	1.00, 1.10, 2.00 & 3.00						E.O. B1	ON -11: 6 REQD/MOD. WAS 2 REQD/MOD. ADDED -27 & -28	LTA-8, LM-1 & LM-2	NOT	REQD	R. NISBET 5-25-67		
	2	1.00, 1.10, 2.00 & 3.00						E.O. B2	IN FLD, B/M & MOD BLOCK ADDED -27 & -29 REMOVED -23 & -25			-23 -25			
	3							E.O. B3	IN FLD, B/M & MOD BLOCK ADDED -27 & -29 REMOVED -23 & -25						
	4	1.10						E.O. B4	REF. E.O. B2 ~ ADD -31 WAS -27		NOT	REQD			
	5	1.10 & 3.00						E.O. B5	FOR -31, IML BDN OPEN 48° WAS IML BDN OPEN 25°		✓				
	6	1.00 & 1.10						E.O. B6	IN MOD. BLOCK ON -19, -21, -29 & -31 ADDED N/A LDW280-53096	LM-3 THRU LM-15	NOT	REQD			
	7	1.00, 1.10, 2.00 & 3.00						E.O. B7	REMOVED -29, ADDED -33 & -35	LTA-8, LM-1 & LM-2		-29			
	8	1.10							REF E.O. B1 "WAS 2 REQD" SHOULD BE WAS 1 REQD	LTA-8, LM-1 & -2	NOT	REQD	JG		
C	1	1.00, 1.01, 2.00, 3.00					✓	E.O. C1	ADDED -37. RESTRICTED -19 (DELETED LM-3 THRU LM-15). ADDED SH 1.01	LM-3(33) THRU LM-15(45)		-19	BEN AZZARA 4-18-68		
	2	1.00					✓	E.O. C2	INCREASED EFF OF LDW280-11131-35 TO LM-3(33) THRU LM-15(45) N/A LDW280-53096.		✓				
	3	1.00 1.01 2.00 3.00		LFM 140		✓		E.O. C3 LCD 2360	ADDED -31-1 & -35-1. REMOVED LM-4 THRU LM-15 FROM -31 & -35. N/A FOR -21 & -37 WAS WAS LDW280-53096 EFF LM-3 THRU LM-15. (-31-1 & -35-1 CAN BE MADE BY REWORKING -31 & -35 RESPECTIVELY)	LM-4 (34) THRU LM-15 (45)	NOTED				
	4	1.00		LFM 126		✓		LCD 1021-33	ON -19, -21, -27, -28, -31 & -33 ADDED END ITEM LFM 126 REQUIREMENTS.	LTA-8 (18)	NOT	REQD		4/29/68	5/2/68

CHG APPROVED LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY	THERMO
A	4/23	4/25/68	4/29/68				
B							
C							

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11131	C
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11131-35-1	E	ANGLE	AL ALLOY SH	2024	QQ-A-250/4	.020×2 3/8×23 3/4	T42	88	
		LDW280-11131-31-1	E	ANGLE	AL ALLOY SH	2024	QQ-A-250/4	.020×4×24 5/8	T42	88	
		LDW280-11131-37	E	CLIP	AL ALLOY SH	2024-T3	QQ-A-250/4	.020×1 1/4×3	NONE	88	
		LDW280-11131-35	E	ANGLE	AL ALLOY SH	2024	QQ-A-250/4	.020X2 3/8X23 3/4	T42	88	
		-33		ANGLE		2024	QQ-A-250/4	.020X2 3/8X23 3/4	T42		
		-31		ANGLE		2024	QQ-A-250/4	.020X4X24 5/8	T42		
		-28		BRACKET		2024-T3	QQ-A-250/5	.020X3X3	NONE		
		-27		BRACKET		2024-T3	QQ-A-250/5	.020X 3 X 3	NONE		
		-21		CLIP		2024-T3	QQ-A-250/4	.020X1 3/8X3	NONE		
		-19		CLIP		2024-T3		.020X1 1/4X 3	NONE		
		-13		BRACKET		2024		.040×2 3/8×3 3/8	T42		
		LDW280-11131-11	E	BRACKET	AL ALLOY SH	2024	QQ-A-250/4	.040×2 3/8×3 1/2	T42	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T42	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

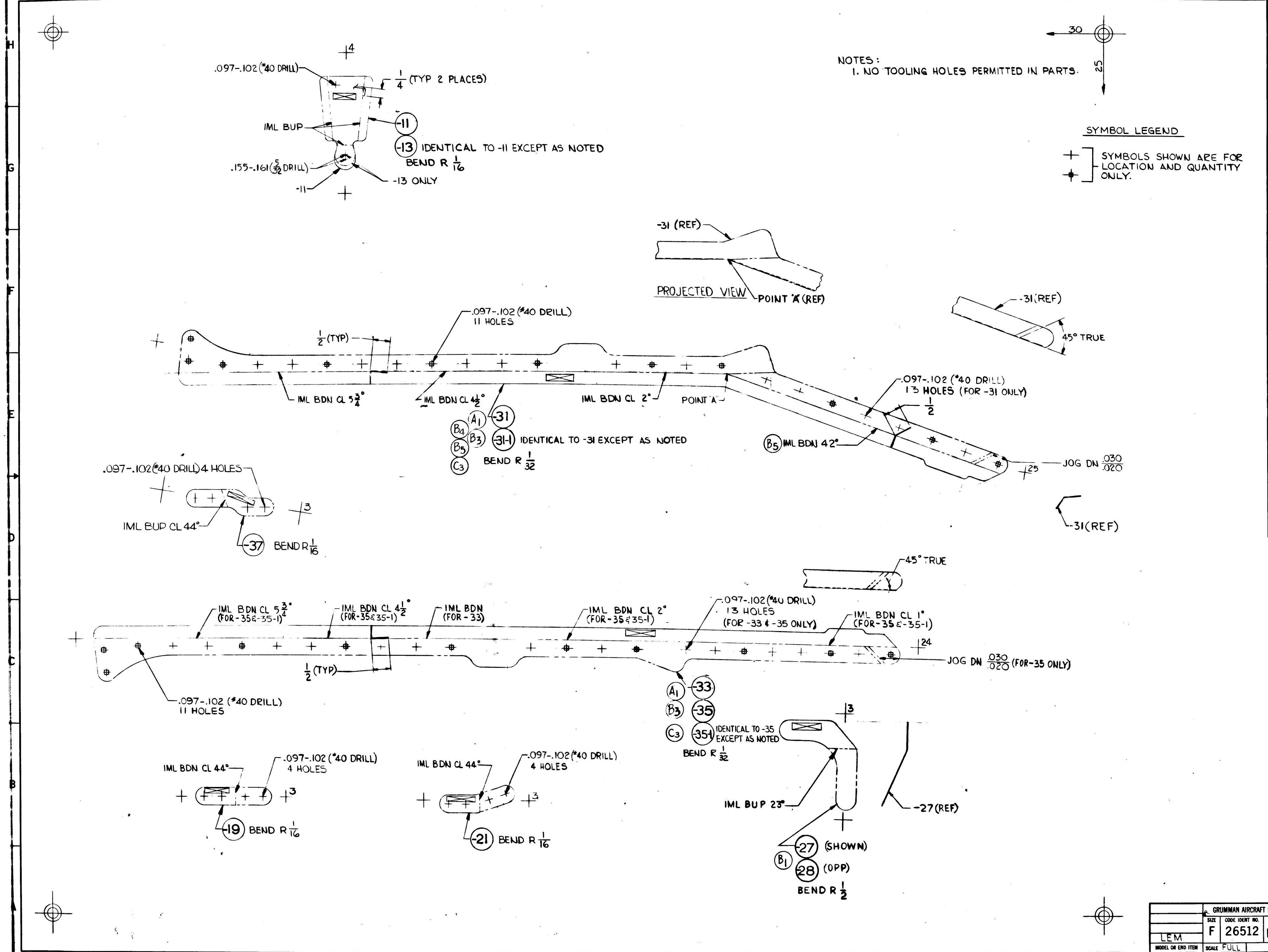
SIZE	CODE IDENT NO.		
B	26512	LDW280-11131	C

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


.097-.102 (#40 DRILL)
1/4 (TYP 2 PLACES)
IML BUP
-11
-13 IDENTICAL TO -11 EXCEPT AS NOTED
BEND R 1/16
.155-.161 (5/32 DRILL)
-11
-13 ONLY
30
25
-31 (REF)
PROJECTED VIEW
POINT 'A' (REF)
-31 (REF)
45° TRUE
.097-.102 (#40 DRILL)
11 HOLES
1/2 (TYP)
IML BDN CL 5 3/4°
IML BDN CL 4 1/2°
IML BDN CL 2°
POINT 'A'
A1 -31
B4 B3 -31-1 IDENTICAL TO -31 EXCEPT AS NOTED
B5
C3 BEND R 1/32
.097-.102 (#40 DRILL)
13 HOLES (FOR -31 ONLY)
1/2
B5 IML BDN 42°
JOG DN .030/.020
25
-31 (REF)
.097-.102 (#40 DRILL) 4 HOLES
IML BUP CL 44°
3
-37 BEND R 1/16
45° TRUE
IML BDN CL 5 3/4° (FOR -35 & -35-1)
IML BDN CL 4 1/2° (FOR -35 & 35-1)
IML BDN (FOR -33)
IML BDN CL 2° (FOR -35 & 35-1)
.097-.102 (#40 DRILL)
13 HOLES
(FOR -33 & -35 ONLY)
IML BDN CL 1° (FOR -35 & -35-1)
24
JOG DN .030/.020 (FOR -35 ONLY)
1/2 (TYP)
.097-.102 (#40 DRILL)
11 HOLES
A1 -33
B3 -35
C3 -35-1 IDENTICAL TO -35 EXCEPT AS NOTED
BEND R 1/32
3
IML BUP 23°
-27 (REF)
B1 -27 (SHOWN)
-28 (OPP)
BEND R 1/2
IML BDN CL 44°
.097-.102 (#40 DRILL)
4 HOLES
3
-19 BEND R 1/16
IML BDN CL 44°
.097-.102 (#40 DRILL)
4 HOLES
3
-21 BEND R 1/16
8 7 6 5 4 3 2 1
H G F E D C B

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.

SYMBOL LEGEND

+ ✦ SYMBOLS SHOWN ARE FOR LOCATION AND QUANTITY ONLY.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	F	26512	LDW280-11131	K C
	SCALE FULL			SHEET 3.00

FOR PHOTO REPRODUCTION

101 NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280 | EO NO. 1049
CONTROL INFO NO. LDW280-B4398

IN M/B REMOVE LM-4 (34) EFF. N/A LDW280-54096
FOR THE FOLLOWING DWGS:

DWG. NO.	DASH NO.	CHG. NO.
LDW280-11125	-13-1, -14-1, -25-1, -31-1, -33-1, -34-1	G1 ✓
11126	-17, -18, -19	B1 ✓
11127	-33-1, -34-1, -35, -39	E1 ✓
11131	-21, -31-1, -35-1, -37	D1 ✓
11612	-15-1, -16-1, -17-1 -19-1, -21-1, -23-1	B3
11613	-11, -12, -13, -14, -15 -21, -22, -24, -25	A5
11614	-11, -12, -13, -14 -15, -17	B2
12000	-1, -2, -3, -11, -12 -15	A1
12001	-1, -3, -11, -15	A1
12008	-11, -13	A6
LDW280-P11321	-11, -13	C4

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LFM

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☑	LCD2360 PKG 32 SH 2 of 4	⑤

REASON FOR EO: UPDATED LM-4 (34) REQ.

DESCRIPTION OF EO: REVISED EFF. DETAIL DWGS FOR N/A LDW280-54096

GAEC EO RELEASE: H.F 7/17/68

MODEL	EFFECTIVITY: ~~PROCURING ACTIVITY NO.~~ E1	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 140	LM-4 (34)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK | SCRAP ✓

APPROVED BY								
DATE	7/11/68	7/12/68		7/10/68			7/13/68	7-17-68
	VDI	~~SUPPORT~~ THERM	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C
DRAWING TITLE: SEE DWG.
DRAWING NO.: LEO 280
EO NO.: 1049

7-15-68
ISSUED BY H TREFFEISEN x7033 SECTION VDI GROUP NO. 335 PL 25

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO-280 | EO NO. 1051
CONTROL INFO NO. LDW280B-4399

IN M/B ADD N/A LDW280-53096, EFF. LM-4 (34) TO THE FOLLOWING DWGS:

DWG. NO.	DASH NO. *	CHANGE NO.
LDW280 - 11124	-49, -50, -39, -45	E2 ✓
-11125	-13, -14, -33 -34, -31, -25	G 2 ✓
-11126	-17, -18, -19	B2 ✓
-11127	-33, -34, -35, -39	E 2 ✓
-11131	-21, -31, -35, -37	D2 ✓
-14344 *	-1	F1
-11612	-15, -16, -17 -19, -21, -23	B4
-11613	-11, -12, -13 -14, -15, -25 -21, -22, -24	A6
-11614	-11, -13, -14 -15, -17, -12	B3
LDW280P 11321	-11, -13	C5

END ITEM & NO. REQD. SAME AS FOR LM-3 (33)

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NAS 9-1100

REWORK INFO.- DETAIL PARTS IN EXISTENCE MAY BE USED.

LFM

DETAIL SPEC REQ ☐	CL II ENGRG CHG ☐	CL I ENGRG CHG ✓	LCD 2360 PKG 32 SH 1 (5)

REASON FOR EO: UPDATED LM-4 (34) REQ.

DESCRIPTION OF EO: FOR DASH * ADDED LM-4 EFF, N/A LDW280-53096

GAEC EO RELEASE: C — JK 7/18/8

MODEL	~~PROCURING ACTIVITY NO.~~ E1	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM140	LM-4	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO

DISPOSITION OF PARTS: NOT REWORK | REQ SCRAP

APPROVED BY									
DATE	7/11/68	7/12/68		7/10/68			7/13/68	7-17-68
	VDI	~~SUPPORT~~ THEEM	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C | DRAWING TITLE: SEE DWGS. | DRAWING NO.: LEO 280 | EO NO.: 1051

'563
ISSUED BY H. TREFFEISEN x 7033 SECTION VD1 GROUP NO. 335 PL 25

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11131
EO NO. D3
CONTROL INFO NO. LDW280B5080

IN F/D, B/M & M/B RESTRICT & CREATE THE DASH NO.'S NOTED
OLD DASH NO.'S SAME AS NEW DASH NO.'S EXCEPT AS NOTED
FOR OLD DASH NO. REMOVE LM-6 THRU LM-15 & FOR NEW DASH
NO. ADD LM-6 THRU LM-15

DASH NO. OLD	NEW DASH NO.	MAT'L THK	EFFECTIVITY
-31-1, -35-1	-39, -41	.012 (WAS) .020	LM-6 THRU LM-15 (WAS LM-5 THRU LM-15)

SWIP

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD 3179 PKG#4

REASON FOR EO: SWIP II

DESCRIPTION OF EO: IN F/D, B/M & M/B ADDED -39 & -41. RESTRICTED -31-1 & -35-1 TO LM-5(35). EFF WAS LM-5(35) THRU LM-15(45)

GAEC EO RELEASE: 8/20/68

MODEL	EFFECTIVITY PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LM-6(36) THRU LM-15(45)		

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK SCRAP ✓

	VDI	THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
APPROVED BY		MMB					
DATE	8/7/68	8/7/68		8/7/68	8/8/68		8-20-68

PRIORITY: C
DRAWING TITLE: BRACKET A.S. ~ THERMAL SHIELD
DRAWING NO. LDW 280-11131
EO NO. D3

7-29-68 ISSUED BY P. FRANZESE X7033 SECTION VDI GROUP NO. 335 PL 25

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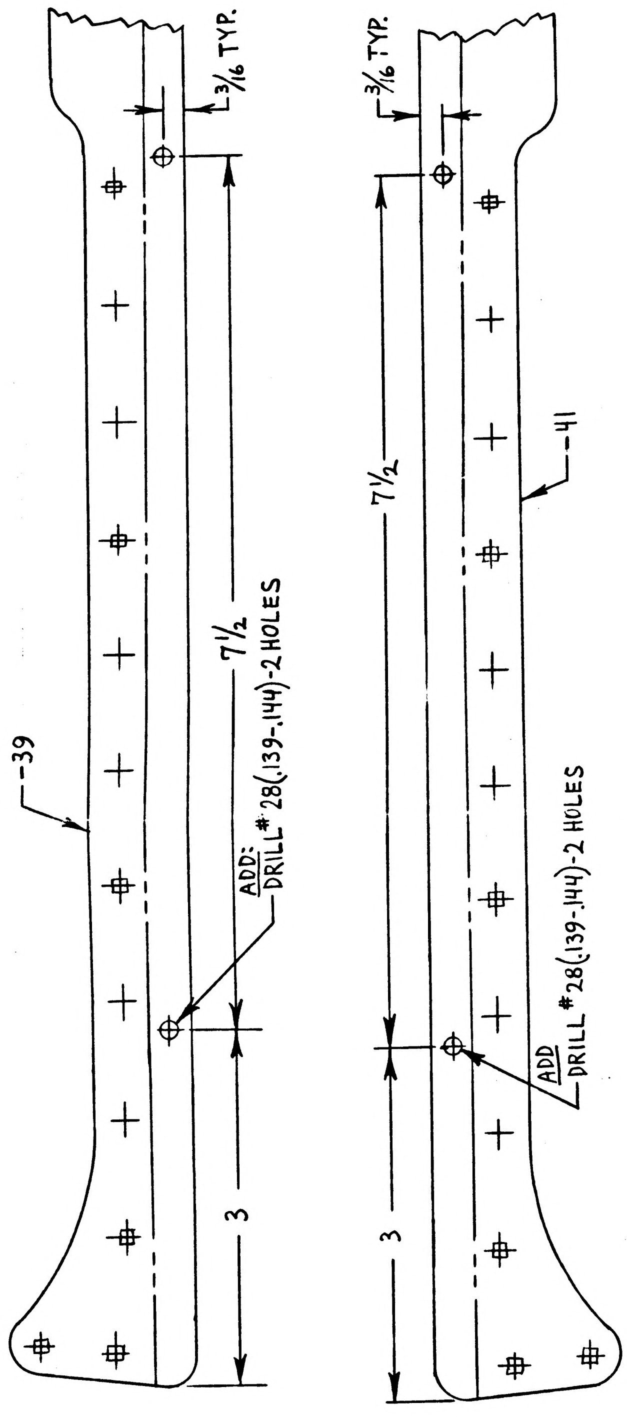
NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11131		EO NO. D4	
CONTROL INFO NO. LDW280B6521			



3/16 TYP.
3/16 TYP.
-39
-41
7½
7½
3
3
ADD: DRILL #28(.139-.144)-2 HOLES
ADD DRILL #28(.139-.144)-2 HOLES

IN F/D FOR -39 & -41 ADD HOLES AS SHOWN ABOVE.

DO NOT ADD ABOVE DIMS. TO DWG.

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 3179 PKG. 5

REASON FOR EO: TO ADD HOLES FOR BLANKET STANDOFFS.

DESCRIPTION OF EO: IN F/D FOR -39 & -41 ADDED: DRILL #28(.139-.144)-2 HOLES

(5) GATE FOR RELEASE: JK 1/6/9

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-6(36) THRU	
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY		MOR		ZCR	SW			
DATE	12/20/68	12/20/68		12/31/68	12-31		1/7/69	1-7-69
	VDI	~~SUPPORT~~ THERMO	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	CONT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	BRACKET ASCENT STAGE-CABIN THERM SHIELD	LDW280-11131	D4

12-30-68
ISSUED BY F. SHANLEY 7033 SECTION VEH. DESIGN INT. GROUP NO. 335 PL 25

LDW280-11132 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28348	LEM-3(33)	1
↕	↕	LEM-2(32)	1
		LEM-1(31)	1
		LTA-8(18)	1
LEM	LDW280-28348	LTA-1(11)	1
PART NO. LDW280-11132-1,-3 & -15		GAEC SCH NO. 31-1, 30	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10		2.00		3.00			
REV	A	A		A		A			
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A			
		PRIM NO.	LE(001)		
LAST DASH NO. USED	-15	215	MP A	8-8-6	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.020 ± 1/2

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS-9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	G.PELLEGRINO 4/26/66	RELIABILITY	
LAYOUT BY			
CHECKED BY	CUB		
GRP LEADER	R. PHILLIPS 4-26		
VEH DES INT	W. BISCHOFF 4-27		
STRUCTURS	FEB 3W 4-27	PROJ ENGR	J.ALBER 5-2
STRUCTURS	HILDERMAN 4-28	REL GROUP	A.CARAMANICA 5-3
WEIGHTS	D. ROBESCH		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT ASSY
ASCENT M/S OXIDIZER TANK
VIBRATION AMPLIFIER ±Z 27

SIZE	CODE IDENT NO.		
B	26512	LDW280-11132	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

SUPERSEDES LDW280-11132 'NO CHANGE' 7-26-66

01 NAS 9-1100

LDW280-11132 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28348	LEM-3(33)	1
↕	↕	LEM-2(32)	1
		LEM-1(31)	1
		LTA-8(18)	1
LEM	LDW280-28348	LTA-1(11)	1
PART NO. LDW280-11132-1,-3 & -15		GAEC SCH NO. 31-1, 30	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10		200		300		
REV	A	A		A		A		
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED

LAST DASH NO. USED -15

GRUMMAN REL INFO A

PRIM NO.	LE(601)	
215	mp A	8-8-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1/2
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS-9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	G.PELLEGRINO 4/26/66	RELIAB.LTY	
LAYOUT BY			
CHECKED BY			
GRP LEADER	R. PHILLIPS 4-26		
VEH DES INT	W. BISCHOFF 4-27		
STRUCTURS	FEB 3W 4-27	PROJ ENGR	J.ALBER 5-2
STRUCTURS	HILDERMAN 4-28	REL GROUP	A.CARAMANICA 5-3
WEIGHTS	D. ROBESCH		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT ASSY
ASCENT M/S OXIDIZER TANK
VIBRATION AMPLIFIER IZ27

SIZE	CODE IDENT NO.		
B	26512	LDW280-11132	A

SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11132 'NO CHANGE' 7-26-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE LAST REVISION 'NO CHANGE LOFTED DWG WAS DIMENSIONED DWD SH1.00 OF 4 WAS SH 1 OF 1 O'NEILL 7/24/66 by						
A	1	1.00, 1.10 2.00, 3.00						EOA1	IN FIELD ON-13 DIM $1\frac{1}{2}$ WAS $1\frac{1}{4}$	LTA 1 (11) LTA 8 (18) LEM 1 (31) LEM 2 (32) LEM 3 (33)	✓		O'NEILL 7-24-66	RVP 8-3	B.H. 8-18-66
	2							EOA2	DWG TITLE SUPPORT ASSY-ASCENT M/S OXIDIZER TANK VIBRATION AMPLIFIER ± Z27 WAS SUPPORT ASSY-ASCENT- M/S ENGINE MOUNT VIBRATION AMPLIFIER ± Z27	NOT REQ'D	NOT REQ'D				

CHG APPROVED

LTR	GROUP LDR	VDI	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY			PROJ ENG	RELEASE	
A	—	RVP 8-3-66									

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11132	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
					-3	-1											
					8	4		NAS697A3		NUT PLATE	STD PART						
								MS20426AD3		RIVET	STD PART						
								LDW280-11132-15	E	ANGLE	AL ALLOY SH	QQ-A 250/5	2024-T3	.040 × 1 1/8 × 7	NONE	88	
					1			-13		SUPPORT	AL ALLOY SH	QQ-A-250/5	2024-T3	.040 × 5 3/4 × 8 3/8	NONE	88	
						1		-11		SUPPORT	AL ALLOY SH	QQ-A-250/5	2024-T3	.040 × 5 1/4 7 1/2	NONE	88	
								-3		SUPPORT ASSY					NONE	NONE	
								LDW280-11132-1	E	SUPPORT ASSY					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

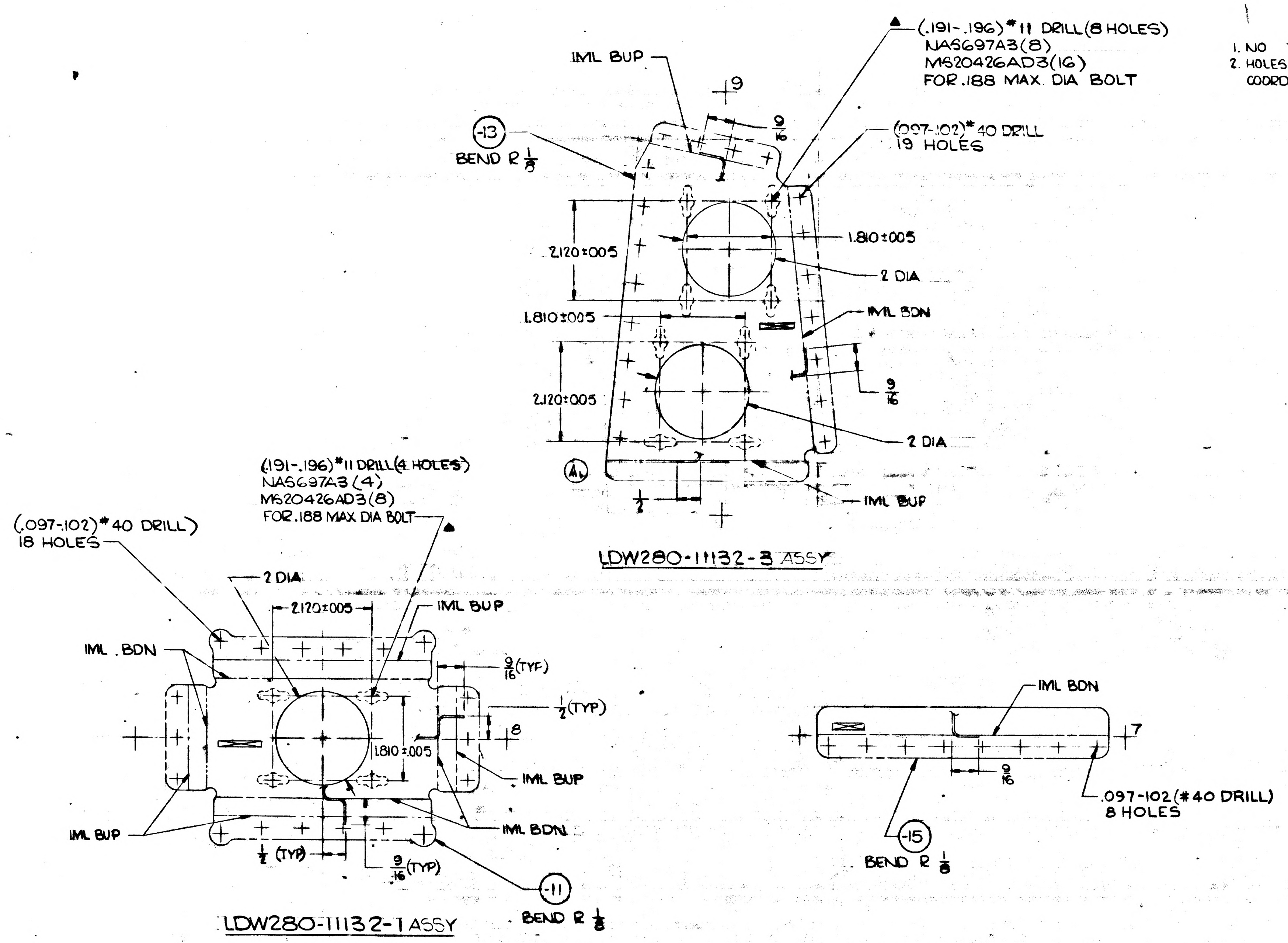
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11132	A
SCALE NONE		SHEET 2.00	

ENG 77.2 7-65

01

NAS 9-1100



IML BUP
-13
BEND R 1/8
(.191-.196) #11 DRILL (8 HOLES)
NAS697A3(8)
MS20426AD3(16)
FOR .188 MAX. DIA BOLT
9
9/16
(.097-.102) #40 DRILL
19 HOLES
2.120±.005
1.810±.005
2 DIA
IML BDN
1.810±.005
9/16
2.120±.005
2 DIA
A
1/2
IML BUP
LDW280-11132-3 ASSY
(.191-.196) #11 DRILL (4 HOLES)
NAS697A3 (4)
MS20426AD3 (8)
FOR .188 MAX DIA BOLT
(.097-.102) #40 DRILL)
18 HOLES
2 DIA
2.120±.005
IML BUP
IML . BDN
9/16 (TYP)
1/2 (TYP)
8
1.810±.005
IML BUP
IML BDN
IML BUP
1/2 (TYP)
9/16 (TYP)
-11
BEND R 1/8
LDW280-11132-1 ASSY
IML BDN
7
9/16
.097-.102 (#40 DRILL)
8 HOLES
-15
BEND R 1/8

NOTES

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. HOLES MARKED WITH ▲ MUST BE COORDINATED WITH P/N 510682-205

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ [redacted]	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .000 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 √ FOR ALL DRILLED HOLES	✓
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	✓
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	F	26512	LDW280-11132	A
SCALE FULL			SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

NAS 9-1100

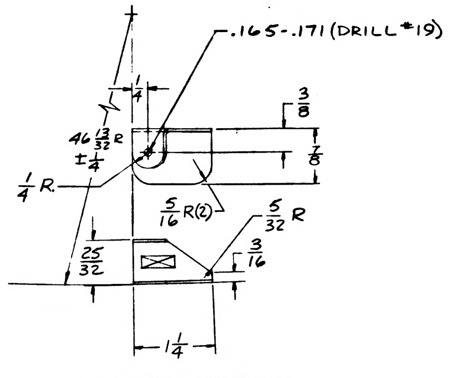
LDW280-11132 A

MANUFACTURING OPERATIONS	
NOTES CHECKED ✓ APPLY TO THIS DWG.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.	
250 FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ∱ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓

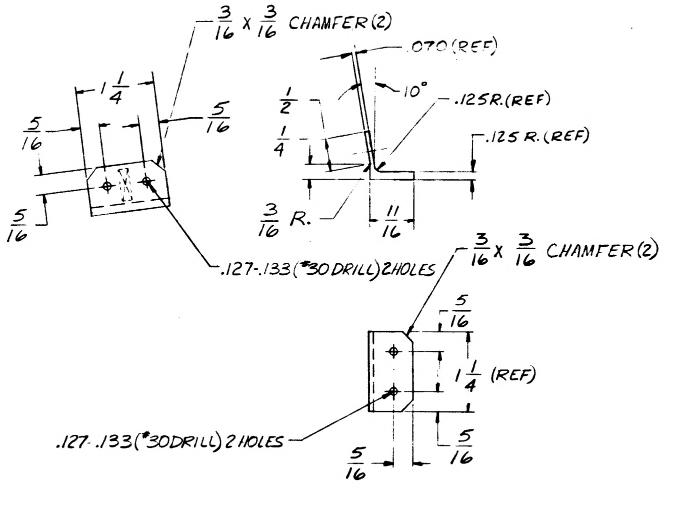
REVISIONS

REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY / DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MODULE NUMBER	DISPOSITION OF EXIST PARTS: RE-WORK	SCRAP	ENGRG APPD	GOVT APPD

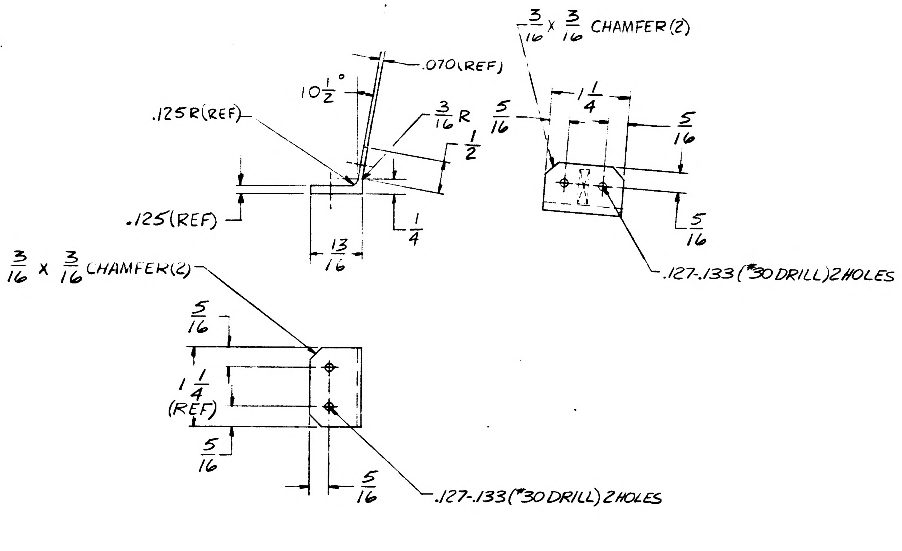
NOTE.
1. FORM -11 & -13 AS PER LSP14-5300A.


.165-.171 (DRILL #19)
3/8
7/8
1/4
46° 13/32 R
±1/4
1/4 R
5/16 R(2)
5/32 R
3/16
25/32
1 1/4

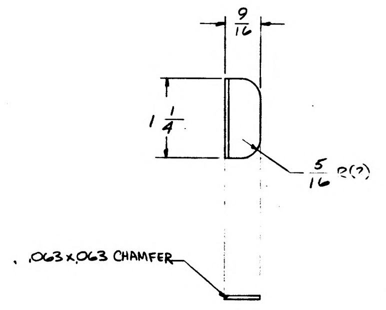
LDW280-11133-15
BEND R. 1/8


3/16 x 3/16 CHAMFER (2)
.070 (REF)
1 1/4
5/16
5/16
5/16
1/2
10°
.125 R. (REF)
.125 R. (REF)
1/4
3/16 R.
11/16
.127-.133 (#30 DRILL) 2 HOLES
3/16 x 3/16 CHAMFER (2)
5/16
1 1/4 (REF)
.127-.133 (#30 DRILL) 2 HOLES
5/16
5/16

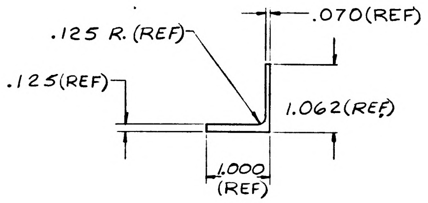
LDW280-11133-11


3/16 x 3/16 CHAMFER (2)
10 1/2°
.070 (REF)
.125 R (REF)
3/16 R
5/16
1 1/4
5/16
1/2
.125 (REF)
13/16
1/4
5/16
.127-.133 (#30 DRILL) 2 HOLES
3/16 x 3/16 CHAMFER (2)
5/16
1 1/4 (REF)
5/16
5/16
.127-.133 (#30 DRILL) 2 HOLES

LDW280-11133-13


9/16
1 1/4
5/16 R(2)
.063 x .063 CHAMFER

LDW280-11133-17


.125 R. (REF)
.070 (REF)
.125 (REF)
1.062 (REF)
1.000 (REF)

EXTR. DIE NO. 9783

NAS 9-1100

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	LSP14-9030	

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

ENG. 003 5-60

QTY REQ'D PER ASSY			PART OR IDENTIFYING NO.	I & T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE
			LDW280-11133-17	E		RAD. BLOCK	AL. AL. SH.	QQ-A-283	7075-T6	.063 × 7/8 × 1 1/2	NONE	88		
			LDW280-11133-15	E		CLIP	AL. AL. SH	QQ-A-355	2024-T3	.040 × 1 1/2 × 2 1/2	NONE	88		
			LDW280-11133-13	E		ANGLE	AL. ALLOY EXTR	QQ-A-277	7075-T6511	EXT. DIE NO. 9783 × 1 1/2	NONE	88		
			LDW280-11133-11	E		ANGLE	AL. ALLOY EXTR	QQ-A-277	7075-T6511	EXT. DIE NO. 9783 × 1 1/2	NONE	88		

TO BE REDRAWN ON PRODUCTION FORMAT. 5

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
LEM	LDW280-51349	LEM-2 (32)	2
LEM	LDW280-51349	LEM-1 (31)	2
PART NO. LDW280-11133-17		GRUMMAN SCH INFO 32-5	

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
LEM	LDW280-51349	LEM-2 (32)	1 EA
LEM	LDW280-51349	LEM-1 (31)	1 EA
PART NO. LDW280-11133-11, 13, & 15		GRUMMAN SCH INFO 32-5	

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
PART NO.		GRUMMAN SCH INFO	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
±1/32 ±.010 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE
GRUMMAN REL INFO
PRIM. NO. LE(001) 215 MP12 3-2.5

DRAWN BY	BRANDT	4-28
CHECKED BY		
LAYOUT BY		
GRP. LDR.		
VEH. DES. INT		
STRUCTURES		
STRUCTURES		4/30
WEIGHTS		5/1
RELIABILITY		
PROJ. ENGR.		5-10
RELEASE GRP.		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

ANGLE
ASCENT MID-SECTION ~ EXTRA VEH.
CREW TRANSFER DEVICE SUPPT.

CONTRACT NO. NAS 9-1100 DOCUMENTATION TYPE II

CODE IDENT NO. 26512 SIZE F 30 X 40 LDW280-11133

SCALE FULL LINE ITEM # 1 SHEET 1

ENG 32.1 REV 3-65 **LIAISON ENGINEERING**

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11133
EO NO. A1
CONTROL INFO NO. LEM-5-7373

IN FLD, B/M, & MOD/BLK

CREATE -19 & -21 SAME AS & TO REPLACE -11 & -13 RESP
EXCEPT: DIM 1¼ (S/B) 1¾ & OMIT #30 HOLES
1 & T = E

DETAIL SPEC REQ ☐ | CL II ENGRG CHG ☐ | CL I ENGRG CHG ☐

REASON FOR EO: FACILITATE INSTL OF PARTS

DESCRIPTION OF EO: IN FLD, B/M & MOD/BLK CREATED -19 & -21 TO REPLACE -11 & -13 RESP.

GAECC EO RELEASE: FR

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM 1 (B1)	
		LEM 2 (B2)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK | SCRAP -11 -13

APPROVED BY			SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
DATE						6-10-66	6-10-66	8-13	6-10-66

PRIORITY: C5

DRAWING TITLE: ANGLE - MIN SECT EXTRA VEH CREW TRANSFER DEVICE SUPT

DRAWING NO.: LDW280-11133

EO NO.: A1

ISSUED BY MDREYES / X-3917 / 6-10-66 SECTION VDI / B. PHILLIPS GROUP NO. 335 PL 35

LDW280-11134 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53051	LM-3(33)	2
LM	LDW280-23051	LTA-3(13)	2
PART NO. LDW280-11134-5		GAEC SCH NO. 31-3	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53051	LM-3(33)	1EA
LM	LDW280-23051	LTA-3(13)	1EA
PART NO. LDW280-11134-1,-3,-7		GAEC SCH NO. 31-3	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A			
LAST DASH NO. USED	-37	PRIM NO. 215			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	P.CICCOTTO	WEIGHTS	ROBESCH DJL 5/17
LAYOUT BY		RELIAB	
CHECKED BY			
GRP LDR	G.PUSATERI 5/5		
VDI	BISCHOFF 5/5		
STRUCT	FEB W 5/13	PROJ ENGR	ALBER - RHC 5/18
STRUCT	HILDERMAN 5/14	REL GROUP	CARAMANICA 5-21

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT ASSEMBLY
ASCENT STAGE
CABIN EQUIPMENT LINES

SIZE	CODE IDENT NO.		
B	26512	LDW280-11134	A
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 12-65

SUPERSEDES LDW280-11134 N.C. 5-21-66

01 1 NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHG, LAST REV NC, KLUGE-10/19/66 LOFTED DWG WAS DIMENSIONED DRAWING ADDED SH 1.10, 2.00, 3.00	NOT REQD	NOT	REQ'D	KLUGE 10-19-66		
A	1	1.00, 1.10						LE0280-287	REMOVE LM-4,-5,-6 REQUIREMENTS ON -1,-3,-5,-7 68	LM-4,-5,-6		✓	MULLEN 10-14-66		

CHG APPROVED	LTR	GROUP LDR	VDI	STRUCTURE	STRUCTURE	WEIGHTS	RELIABILITY					
	A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11134	A
SCALE	NONE		SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

-7	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
3	5	7	7		GR500A-4C	E	RIVET	GRUMMAN STD	STD PART					
1					LDW280-11134 -37		GANG CHANNEL	NAS688R-6-6			ACT. LGTH= 4 7/16			
	1				-35		GANG CHANNEL	NAS688R-6-10			ACT. LGTH= 7 7/16			
		1	1		-33		GANG CHANNEL	NAS688R-6-14			ACT. LGTH=10 7/16			
1					-23		ZEE	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 × 3 X 5	NONE	88	
	1				-21						.040 × 3 X 9			
		1			-19						.040 × 3 X 11			
			1		-17		ZEE	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 × 3 X 11	NONE	88	
					-7		SUPPORT ASSY					NONE	NONE	
					-5									
					-3									
					LDW280-11134 -1	E	SUPPORT ASSY					NONE	NONE	

QTY PER ASSEMBLY

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-103

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11134	A

SCALE NONE

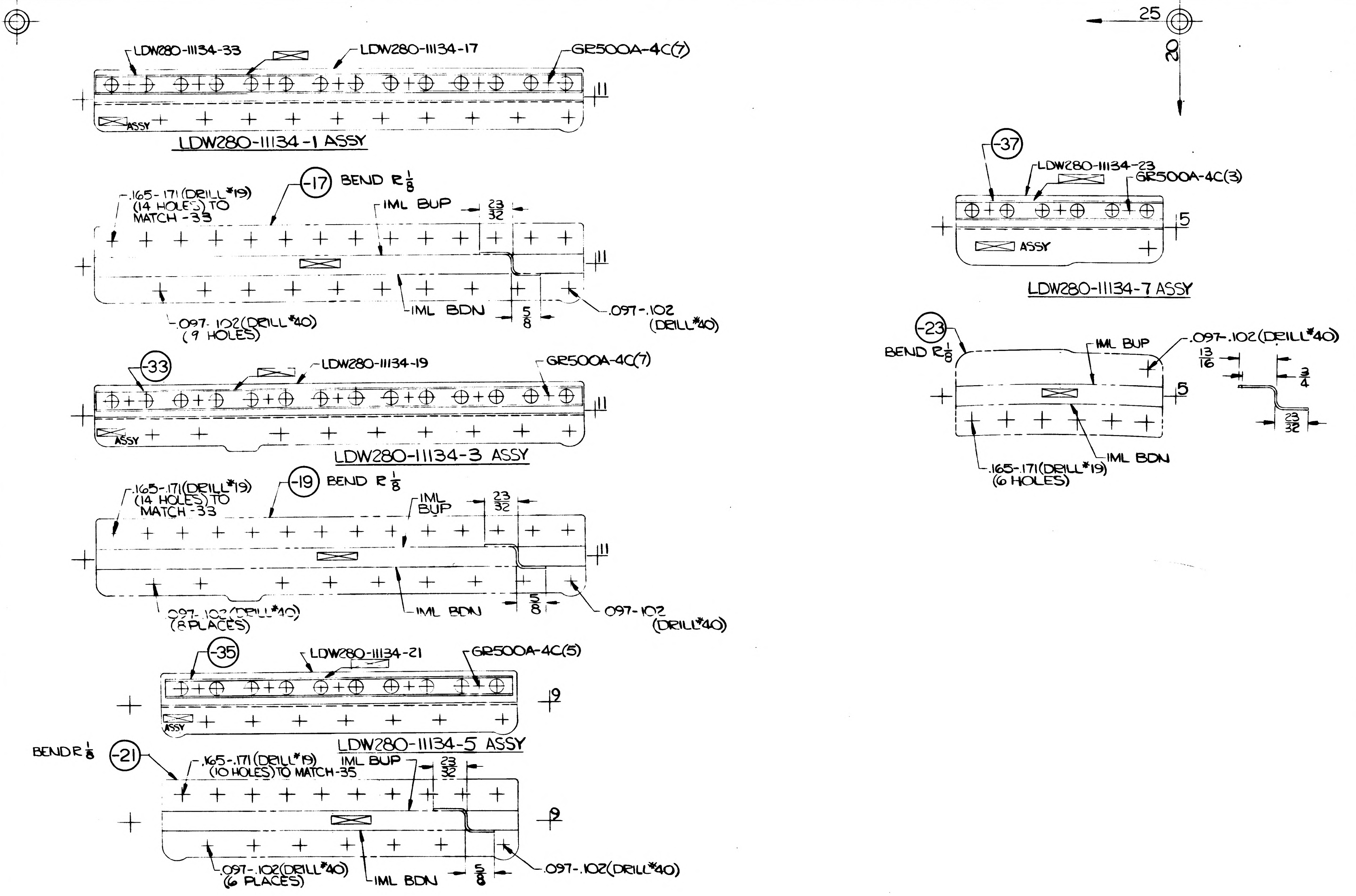
SHEET 200

ENG 77.2 7-65

01

NAS 9-1100

LDW280-11134 A


LDW280-11134-33
LDW280-11134-17
GR500A-4C(7)
ASSY
LDW280-11134-1 ASSY
-17
BEND R 1/8
.165-.171(DRILL #19) (14 HOLES) TO MATCH -33
IML BUP
23/32
.097-.102(DRILL #40) (9 HOLES)
IML BDN
5/8
.097-.102 (DRILL #40)
-33
LDW280-11134-19
GR500A-4C(7)
LDW280-11134-3 ASSY
-19
BEND R 1/8
.165-.171(DRILL #19) (14 HOLES) TO MATCH -33
.097-.102(DRILL #40) (8 PLACES)
.097-.102 (DRILL #40)
-35
LDW280-11134-21
GR500A-4C(5)
LDW280-11134-5 ASSY
BEND R 1/8
-21
.165-.171(DRILL #19) (10 HOLES) TO MATCH -35
.097-.102(DRILL #40) (6 PLACES)
.097-.102(DRILL #40)
25
20
-37
LDW280-11134-23
GR500A-4C(3)
LDW280-11134-7 ASSY
-23
BEND R 1/8
.097-.102(DRILL #40)
13/16
3/4
.165-.171(DRILL #19) (6 HOLES)
11
9
5

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
LM	SIZE D	CODE IDENT NO. 26512	LDW280-11134	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

2 FOR PHOTO REPRODUCTION K2

01 NAS 9-1100

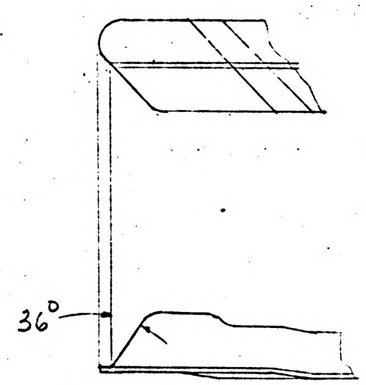
G 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW280-1119		EO NO. B1
CONTROL INFO NO. LDW280-9106		



LDW280-11194-11

3

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
PROVIDE CLEARANCE FOR BEAM	TRIMMED -11 36°	9.27

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
EM		LEM 2 (31E32)	
EM		LTA 8 (18)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
DATE					8/17		8-1566	8-22-66

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	TEE A/S M/S LOWER THERMAL SHIELD L.H. -761	LDW280-1119	B1

ISSUED BY A. PFORTSCH x 1441 SECTION VD1 GROUP NO. 335 PL 35

LDW280-11135 B

PART NO LDW280-11135-15

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54051	LM-15(45)	1
		THRU	
	LDW280-54051	LM-4(34)	1
LM	LDW280-53051	LM-3(33)	1

PART NO. LDW280-11135-1, -3

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23051	LTA3(13)	1

PART NO. LDW280-11135-51

GAEC SCH NO. 31-3

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-54051	LEM-15(45)	1
		LEM-14(44)	1
		LEM-13(43)	1
		LEM-12(42)	1
		LEM-11(41)	1
		LEM-10(40)	1
		LEM-9(39)	1
		LEM-8(38)	1
		LEM-7(37)	1
		LEM-6(36)	1
		LEM-5(35)	1
LEM	LDW280-54051	LEM-4(34)	1

PART NO. LDW280-11135-5, -9, -13

GAEC SCH NO. 31-3

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53051	LEM3(33)	1EA
LEM	LDW280-23051	LTA 3(13)	1EA

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	B	B	B		B				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED —

LAST DASH NO. USED -53

GRUMMAN REL INFO B

PRIM NO. 215 | JK(001) ME-38 12/17/68

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY F. CICCOTTO 5/2

RELIABILITY

LAYOUT BY

CHECKED BY

GR LEADER FUSATERI 5/5

VEH DES INT BISCHOFF 5/5

STRUCT FEB 5/13

STRUCT R. HILDERMAN 5/14

WEIGHTS D. ROBESCH DJL 5/17

PROJ ENGR J ALBER RMS 5/18

REL GROUP A. CARAMANICA 5/19

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT ASSEMBLY
ASCENT STAGE-CABIN-EQUIPT LINES

SIZE B | CODE IDENT NO. 26512 | LDW280-11135 | B

SCALE FULL NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW 280-11135 NO CHG ~ 5-2-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
								RETRACED NO CHG LAST REV NO CHG J R QUARLES 8-17-66 SHT OF 4 WAS 1 OF 1 ADD SH 1.10, 2.00 & 3.00							
A	1	1.00 1.10 3.00						EO A1	REMOVED -11 REQUIREMENTS, CREATED -13 ASSEMBLY.	NOTED		-11	J R Quarles 8-17-66		
	2	1, 1.10, 2, 3						EO A2	ADDED -15 ASSY, -33 ZEE, -49 CHANNEL & NOTE *1.	LEM-4(34) THRU LEM-15(45)	NOT	REQ'D	GARY KORDES 9-23-66		
	3	1,1.10,2,3						EO A3	ADDED -17 ASSY & -35 ZEE	LEM-4(34) THRU LEM-15(45)	NOT	REQ'D			
	4	1, 1.10						EO-A4	ON-1,-3,-5,-9 &-13 REMOVED REQUIREMENTS FOR NEXT ASSY LDW280-54051 LEM 4, 5, & 6 ; ON-7 ADDED REQUIREMENTS FOR LEM-7 THRU LEM-15.	LEM-4 THRU LEM-15		✓			
	5	1.10, 3							ADDED 3/8 FOR -1 ASSY ONLY, 5/8 FOR -5 & -7, & $\frac{23}{32}$ (TYP), & $\frac{11}{16}$ FOR -1,-3,-5,-7 & -15 FOR -13 ADDED DIM. 1½ (2 PLACES) & $\frac{7}{8}$.	NOT REQD	NOT	REQD			
	6	1.10,2,3							REF. EO A2, NO. OF RIVETS "5" SHOULD BE "3", "NOTE Δ" & "SEE NOTE Δ" REMOVED.	NOT REQ'D	NOT	REQ'D			
	7	1.10,2,3							REF. EO A3, "-21 GANG CHANNEL" SHOULD BE "-39 GANG CHANNEL.	NOT REQD	NOT	REQ'D			
B	1	1.00, 1.10, 2.00, 3.00						EO B1	ADDED -19 ASSY -31 ZEE & -49 GANG CHANNEL REMOVED -17.	LM-4 THRU LM-15		-17	B. ACUNTO JR 11-6-68		
	2	1.00						LEO280-319	ON -1, -3 REMOVED LEM-3 REQUIREMENTS	LM-3(33)		✓			
	3	1.00, 1.10 2.00, 3.00						EO B3	REV OF EO B1 -51(WAS) -19, -53(WAS) -31, -39(WAS) -49	LM-4 THRU LM-15	✓				
	4	1.00						LEO280-339	ON -15 QUANTITIES (1) WAS REVISED AS NOTED	LM-3(33)	NOTED				
	5	2.00 3.00						LEO280-477	CHANGED GR500A-4C RIVETS TO GR501A-4B RIVETS	LM-7 THRU LM-15	✓				
	6	1.00, 2.00, 3.00					✓	EO B6 Ⓒ	CANCELLED -7 ASSY & -25 DETAIL	LM-4 THRU LM-15		-7, -25.		BC	

	LTR	GROUP LDR	VEH DES INT	STRUCT	STRUCT	WEIGHTS	RELIABILITY
CHG APPROVED	A						
	B						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11135	B
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY																			
-51	H7	-15	-13	-9		-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
2	2									GR501A-4B	E	RIVET	GRUMMAN STD						
2	2	3	4	4		2	2	3		GR500A-4C	E	RIVET	GRUMMAN STD						
1										LDW280-11135-53		ZEE	AL ALY SH	QQ-A-250/4	2024-T3	.040 x 2 1/2 x 3	NONE	88	
										LDW280-11135-51		SUPPORT ASSY							
		1								LDW280-11135-49		GANG CHANNEL	NAS688P-6-6			ACT LG 4 1/2			
			1							-47			NAS688P-6-9			ACT LG 6 11/16			
				1						-43			NAS688P-6-8			ACT LG 5 15/16			
						1				-41			NAS688P-6-2			ACT LG 1 19/32			
1	1						1			-39			NAS688P-6-3			ACT LG 2 3/16			
								1		-37		GANG CHANNEL	NAS688P-6-5			ACT LG 3 11/16			
	1									-35		ZEE	AL ALY SH	QQ-A-250/4	2024-T3	.040 x 2 1/2 x 3	NONE	88	
		1								-33		ZEE	AL ALY SH	QQ-A-250/4	2024-T3	.040 x 2 1/2 x 5 5/8	NONE	88	
			1							-31						.040 x 2 1/2 x 7 5/8			
				1						-27						.040 x 2 1/2 x 7			
						1				-23						.040 x 2 1/2 x 2 3/4			
							1			-21						.040 x 2 1/2 x 3 1/2			
								1		-19		ZEE	AL ALY SH	QQ-A-250/4	2024-T3	.040 2 1/2 x 4 3/4	NONE	88	
										-17		SUPPORT ASSY							
										-15		SUPPORT ASSY							
										-13									
										-9									
										-5									
										-3									
										LDW280-11135-1	E	SUPPORT ASSY							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP 14-3030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

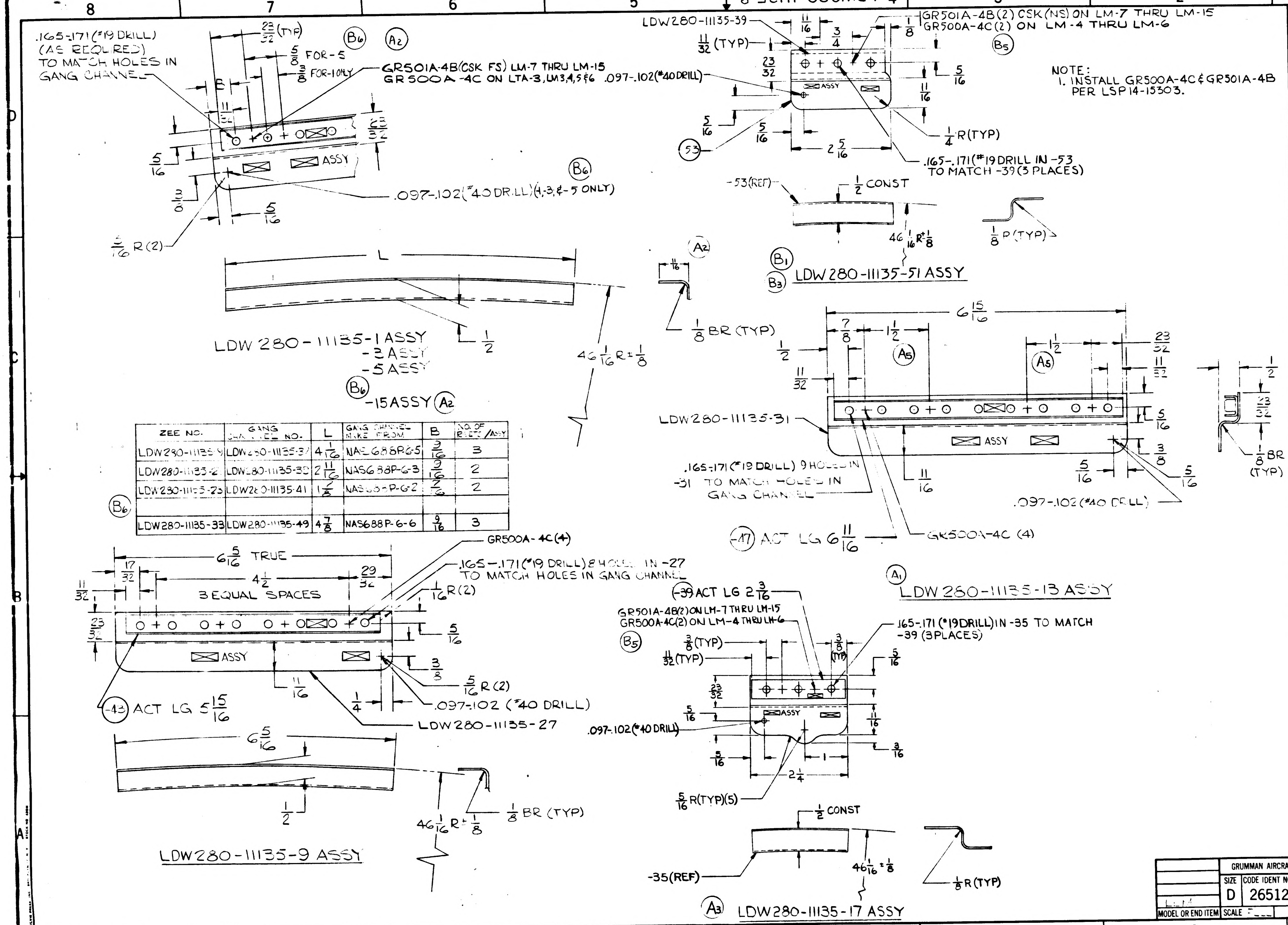
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11135	B
SCALE NONE		SHEET 2.00	

ENG 77.2 7-65

01

NAS 9-1100


.165-.171 (#19 DRILL) (AS REQUIRED) TO MATCH HOLES IN GANG CHANNEL
23/32 (TYP)
5/8 FOR -5
3/8 FOR -1 ONLY
GR501A-4B (CSK FS) LM-7 THRU LM-15
GR500A-4C ON LTA-3, LM3,4,5 & 6 .097-.102 (#40 DRILL)
B
11/16
ASSY
.097-.102 (#40 DRILL) (-1,-3,&-5 ONLY)
5/16
3/16 R (2)
L
LDW 280-11135-1 ASSY
-3 ASSY
-5 ASSY
-15 ASSY
46 1/16 R ± 1/8
1/2
1/8 BR (TYP)
LDW280-11135-39
11/32 (TYP)
3/4
1/8
GR501A-4B (2) CSK (NS) ON LM-7 THRU LM-15
GR500A-4C (2) ON LM-4 THRU LM-6
23/32
5/16
1/4 R (TYP)
2 5/16
-53
.165-.171 (#19 DRILL IN -53 TO MATCH -39 (3 PLACES)
-53 (REF)
1/2 CONST
46 1/16 R ± 1/8
1/8 R (TYP)
LDW 280-11135-51 ASSY
6 15/16
7/8
1 1/2
LDW280-11135-31
.165-.171 (#19 DRILL) 9 HOLES IN -31 TO MATCH HOLES IN GANG CHANNEL
.097-.102 (#40 DRILL)
GR500A-4C (4)
-47 ACT LG 6 11/16
LDW 280-11135-13 ASSY
1/8 BR (TYP)
GR500A-4C (4)
6 5/16 TRUE
17/32
4 1/2
3 EQUAL SPACES
29/32
.165-.171 (#19 DRILL) 8 HOLES IN -27 TO MATCH HOLES IN GANG CHANNEL
1/16 R (2)
5/16 R (2)
.097-.102 (#40 DRILL)
LDW280-11135-27
-45 ACT LG 5 15/16
6 5/16
46 1/16 R ± 1/8
1/8 BR (TYP)
LDW280-11135-9 ASSY
-39 ACT LG 2 3/16
GR501A-4B (2) ON LM-7 THRU LM-15
GR500A-4C (2) ON LM-4 THRU LM-6
3/8 (TYP)
11/32 (TYP)
.165-.171 (#19 DRILL) IN -35 TO MATCH -39 (3 PLACES)
.097-.102 (#40 DRILL)
2 1/4
5/16 R (TYP) (5)
1/2 CONST
-35 (REF)
46 1/16 R ± 1/8
1/8 R (TYP)
LDW280-11135-17 ASSY
A2 B6 B1 B3 B5 A5 A6 A1 A3

NOTE:
1. INSTALL GR500A-4C & GR501A-4B PER LSP14-15303.

ZEE NO.	GANG CHANNEL NO.	L	GANG CHANNEL MAKE FROM	B	NO. OF RIVETS/ASSY
LDW280-11135-9	LDW280-11135-37	4 1/16	NAS688P-6-5	9/16	3
LDW280-11135-21	LDW280-11135-39	2 11/16	NAS688P-6-3	9/16	2
LDW280-11135-23	LDW280-11135-41	1 7/8	NAS688P-6-2	7/16	2
LDW280-11135-33	LDW280-11135-49	4 7/8	NAS688P-6-6	9/16	3

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

[illegible] PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
D	26512	LDW280-11135	B

LEM
MODEL OR END ITEM
SCALE F
SHEET

LDW280-11135 B

NAS 9-1100

LEM	LDW280-54051	LEM-15(45)	1
LEM		LEM-14(44)	
LEM		LEM-13(43)	
LEM		LEM-12(42)	
LEM		LEM-11(41)	
LEM		LEM-10(40)	
LEM		LEM-9(39)	
LEM		LEM-8(38)	
LEM		LEM-7(37)	
LEM		LEM-6(36)	
LEM		LEM-5(35)	
LEM	LDW280-54051	LEM-4(34)	
LEM	LDW280-53051	LEM-3(33)	
LEM	LDW280-23051	LTA-3(13)	1
PART NO	LDW280-11136-9		
LEM	LDW280-54051	LEM-15(45)	1 EA
		LEM-14(44)	1 EA
		LEM-13(43)	1 EA
		LEM-12(42)	1 EA
		LEM-11(41)	1 EA
		LEM-10(40)	1 EA
		LEM-9(39)	1 EA
		LEM-8(38)	1 EA
		LEM-7(37)	1 EA
		LEM-6(36)	1 EA
		LEM-5(35)	1 EA
LEM	LDW280-54051	LEM-4(34)	1 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-11136-17, -19,-51		GAEC SCH NO. 31-1	

LDW280-11136 C

SMRP

LEM	LDW280-54051	LEM-15(45)	1 EA
		LEM-14(44)	
		LEM-13(43)	
		LEM-12(42)	
		LEM-11(41)	
		LEM-10(40)	
		LEM-9(39)	
		LEM-8(38)	
		LEM-7(37)	
LEM	LDW280-54051	LEM-6(36)	1 EA
LEM	LDW280-54051	LEM-5(35)	1 EA
LEM	LDW280-54051	LEM-4(34)	1 EA
LEM	LDW280-53051	LEM-3(33)	1 EA
LEM	LDW280-23051	LTA-3(13)	1 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-11136-3		GAEC SCH NO. 31-3	

LEM	LDW280-54051	LEM-15(45)	1
		THRU	
	LDW280-54051	LEM-4(34)	1
LEM	LDW280-53051	LEM-3(33)	1
PART NO.	LDW280-11136-15		
LEM	LDW28053051	LEM-3(33)	2
LEM	LDW280-23051	LTA-3(13)	2
PART NO.	LDW280-11136-13		
LEM	LDW280-23051	LTA-3(13)	1 EA
PART NO.	LDW280-11136-5-7+-11		
LEM	LDW280-53051	LEM-3(33)	2
LEM	LDW280-23051	LTA-3(13)	2
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-11136-1		GAEC SCH NO. 31-3	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	2.01	3.00
REV	C	C	C	C	C
SHEET	1.01	1.11			
REV	C	C			
SHEET					
REV					

LAST SECT LTR USED		GRUMMAN REF INFO C	
LAST DASH NO. USED	-81	PRIM NO. 215	JK XII MP 16C 6/10/8 CMF

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	P. CICCOTTO	RELIABILITY	
LAYOUT BY		PROJ ENG	J. ALBER / KPC
CHECKED BY		RELEASE	A. CARAMANICA
GRP LDR	J. PASATERI		
VDI	W. BISCHOFF		
STRUCTURES	ED W	PROJ ENGR	
STRUCTURES	R. HILDERMAN	REL GROUP	
WEIGHTS	D. ROBESCH		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT ASSEMBLY
ASCENT STAGE-CABIN-EQUIP LINE

SIZE	CODE IDENT NO.		
B	26512	LDW280-11136	C
SCALE	NONE	SHEET 1.00 OF 7	

ENG 77.1 12-65

SUPERSEDES LDW280-11136 5-2-66

01

NAS 9-1100

LDW280-11136 C

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54051	LM-4(34)	1
PART NO. LDW280-11136-53		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54051	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
LM	LDW280-54051	LM-5(35)	1
PART NO. LDW280-11136-81		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET									
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED

GRUMMAN REL INFO

PRIM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO.

DRAWN BY

LAYOUT BY

CHECKED BY

PROJ ENGR

REL GROUP

LINE ITEM

DOCUMENTATION TYPE

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-11136 C

SCALE NONE
SHEET 1.01 OF

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
								RETRACED	NO CHANGE LAST REV N/C J.GARRAFFO 7-27-66 SH 1OF4 WAS SH 1OF1						
A	1	1,1.10&3.00						EO A1	FOR -11ASSY CHANGED QUANTITY REQD PER MOD 1 WAS 2	LEM-3THRU LEM-6 LTA-3		-11	GARRAFFO 7-27-66		
B	1	1,1.10, 2.01 & 3.00						EO B1	IN B/M & FLD ADDED (1) EA LDW280-11136-15,-17,-19,-51, -53, ASSY; -35,-37,-39,-57 & -59 ZEE & -63,-65,-67,-69 -71 GANG CHANNEL ADD GEN NOTES 1 & 2	LEM-4 THRU LEM-15	NOT	REQD RL	BASCIANELLI 9/12/66		
	2	1, 1.10						EO B2	ON-1,-5,-7,&-11 REMOVED REQUIREMENTS FOR NEXT ASSY LDW280-54051 LEM-4,5,&6; ON-3,-9,&-13 ADDED REQUIREMENTS FOR LEM-7 THRU LEM-15. FL	LEM-4 THRU LEM-15		✓	KORDES 10-4-66		
	3	1, 1.10						LEO 280-318	REVISED QUANTITIES OF LDW280-11136-9 1 REQD WAS 2 REQD	LM-3		✓	T FRIEDA 10-21-66		
	4							LEO 280-319	ON -5,-7,-11 REMOVED LM-3 REQUIREMENTS.			E.H.			
C	1	1.00						LEO280-339	ON -15 ADDED LM-3 REQUIREMENTS N/A LDW280-53051 (1) REQD.	LEM-3 (33)	NOT	REQD	F. DUCI 1-23-68		
	2	2.00, 2.01, 3.00						LEO280-477	CHANGE GR500A-4C RIVETS TO GR501A-4B RIVETS.	LEM-7 THRU LEM-15	✓				
	3	3.00					✓	EOC3	ON SHEET 3, TRIM MATERIAL FROM -39 ZEE ADDED DETAIL A	LM-6 THRU LM-15	✓				
	4	1.00					✓	EOC4	IN MOD. BLK FOR -13 INSTL, N/A LDW280-54051, 2 REQD. WAS 1 REQD.	LM-4 THRU LM-15	NOT	REQD			
	5	3.00				✓		EOC5 LCD 1368	ON -17. REVISED TRIM OF -37 AND -65. L="SEE VIEW" (WAS 4 3/16). ADDED VIEW *-* FOR -17	LM-4 THRU LM-15	✓				
	6	3.00				✓		EOC6 LCD 1368	ADDED SEPARATE DETAIL & VIEW TO SHOW -51 ASSY. "L" FOR -51 WAS 8 15/16 IS 8 1/4. ADD DETAIL B.	LM-4 THRU LM-15	✓	H.D.			

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY	PROJ. ENG.	RELEASE
A								
B								
C								

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11136	C

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
C	7	3.00					✓	EOC7	TRIMMED -51 ADDED SH. 1.11	LM-4 THRU LM-15	✓		F. DUCI 1-23-68		
	8	1.00, 3.00		G		✓		EOC8 LCD 2208	IN FIELD OF DWG AND B/M, DELETED -13, -33, AND -49. (WAS 1 EA REQD.) HD	LM-4 THRU LM-15		-13 -33 -49			
	9	1.00, 2.01 3.00				✓		EOC9 LCD 1368	CREATED -81. ADDED SH 1.01	LM-5 THRU LM-15	✓		G. DUMITRESKO 5-31-68		
	10	1.00, 2.01 3.00				✓		EOC10 LCD 1368	REF EOC9: -81 WAS -53, -73 WAS -59, -79 WAS -71, NAS688P-6-6 WAS NAS688P-6-7. REMOVED -53, -71, & -59 FROM LM-5(35) THRU LM-15(45). (-81, -73, -77 MAY BE MADE BY REWORKING -53, -59, -71.)		NOTED	H.D.			
	11					✓		LCD 1368	REF EOC5: ADDED VIEW ** FOR -17 NOT REQD	LM-4 THRU LM-15				6-3-68	
	12			G		✓		LCD 2208	REF EOC8: (WAS 1 EA REQD) S/B (WAS 2 EA REQD) H.D.			✓			

CHG APPROVED LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY
C						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11136	C

SCALE NONE SHEET 1.11

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY																	
-13	-11	-9	-7	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
2	2	2	2	2	2	2		GR500A-4C	E	RIVET	GRUMMAN STD						
		2			2			GR501A-4B	E	RIVET	GRUMMAN STD						
1								LDW280-11136-49		GANG CHANNEL	NAS688P-6-5			ACT. LG 3 11/16	NONE	NONE	
	1	1						-47			NAS688P-6-2			ACT. LG 1 19/32			
			1					-45			NAS688P-6-4			ACT. LG 2 15/16			
				1	1			-43			NAS688P-6-3			ACT. LG 2 3/16			
						1		-41		GANG CHANNEL	NAS688P-6-6			ACT. LG 4 7/16	NONE	NONE	
1								-33		ZEE	AL ALLOY SH	QQ-A-250/4	2024-T3	.040x2 1/2x 4	NONE	88	
	1							-31						.040x2 1/2x 2 1/8			
		1						-29						.040x2 1/2x 2			
			1					-27						.040x2 1/2x 3 1/2			
				1				-25						.040x2 1/2x 2 1/2			
					1			-23						.040x2 1/2x 3			
						1		-21		ZEE	AL ALLOY SH	QQ-A-250/4	2024-T3	.040x2 1/2x 5 1/8	NONE	88	
								-13		SUPPORT ASSY					NONE	NONE	
								-11									
								-9									
								-7									
								-5									
								-3									
								LDW280-11136-1	E	SUPPORT ASSY					NONE	NONE	

~~SYM~~ OR NO.	~~PROCESS~~ OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP-14-9030						

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11136	C
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

QTY PER ASSEMBLY						CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
-81	-53	-51	-19	-17	-15											
5	6	10	3	3	2		GR500A-4C	E	RIVET	GRUMMAN STD						
5		10	3	3	2		GR501A-4B	E	RIVET	GRUMMAN STD						
1							LDW280-11136-77		GANG CHANNEL	NAS688P-6-6			ACT LG 4 7/16	NONE	NONE	
	1						-71		GANG CHANNEL	NAS688P-6-7			ACT LG 5 5/8	NONE	NONE	
		1					-69			NAS688P-6-11			ACT LG 8 15/16			
			1				-67			NAS688P-6-4			ACT LG 3 1/16			
				1			-65			NAS688P-6-5			ACT LG 4 3/16			
					1		-63		GANG CHANNEL	NAS688P-6-3			ACT.LG 2 5/8	NONE	NONE	
1							-73		ZEE	AL ALLOY SH	QQ-A-250/4	2024-T3	.040×2 1/2×5 1/8	NONE	88	
	1						-59			AL ALLOY SH	QQ-A-250/4	2024-T3	.040×2 1/2×5 7/8	NONE	88	
		1					-57						.040×2 1/2×9 1/4			
			1				-39						.040×2 1/2×3 5/16			
				1			-37						.040×2 1/2×4 1/2			
					1		-35		ZEE	AL ALLOY SH	QQ-A-250/4	2024-T3	.040×2 1/2×2 7/8	NONE	88	
							-81		SUPPORT ASSY					NONE	NONE	
							-53									
							-51									
							-19									
							-17									
							LDW280-11136-15	E	SUPPORT ASSY					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11136	C

SCALE NONE

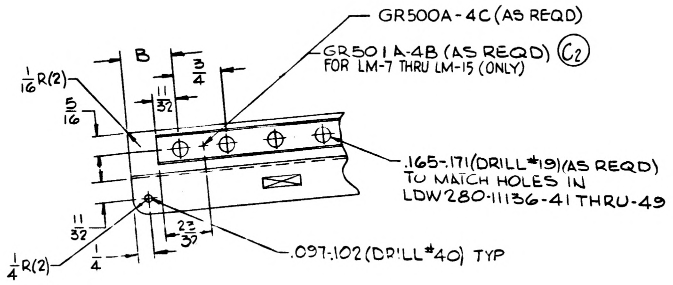
SHEET 2.01

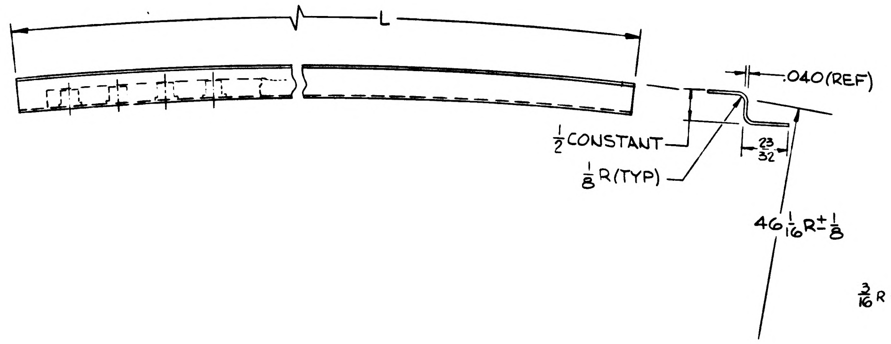
ENG 77.2 7-65

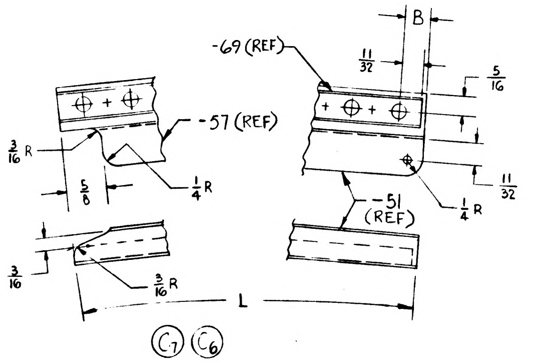
01

NAS 9-1100

NOTES:
1. TACK RIVETS FOR -15,-17,-19,-51,-53&-81 ASSY'S ONLY ARE LOCATED EQUALLY BETWEEN EACH TWO #19 (.165-171) DIA GANG CHANNEL HOLES.
2. INSTALL GR501A-4B & GR500A-4C PER LSP14-15303.

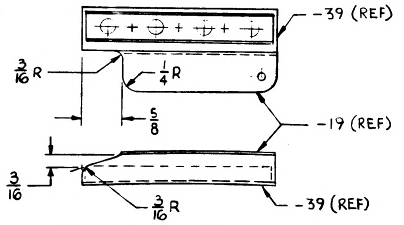

GR500A-4C (AS REQD)
GR501A-4B (AS REQD) (C2)
FOR LM-7 THRU LM-15 (ONLY)
B
3/4
11/32
1/16 R(2)
5/16
.165-.171 (DRILL #19) (AS REQD)
TO MATCH HOLES IN
LDW280-11136-41 THRU -49
11/32
2 1/32
1/4 R(2)
1/4
.097-.102 (DRILL #40) TYP


L
.040 (REF)
1/2 CONSTANT
1/8 R (TYP)
23/32
46 1/16 R ± 1/8


B
-69 (REF)
11/32
5/16
-57 (REF)
3/16 R
1/4 R
5/8
-51 (REF)
1/4 R
11/32
3/16
3/16 R
L

(C7) (C6)

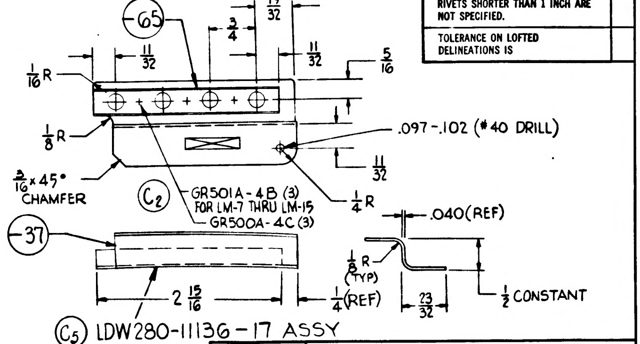
DETAIL B (FOR -51 ONLY)


-39 (REF)
3/16 R
1/4 R
5/8
-19 (REF)
3/16
3/16 R
-39 (REF)

(C3) DETAIL A (FOR -19 ONLY)

	ASSEMBLY NO.	NO. REQD PER MOD	ZEE NO.	GANG CHANNEL NO.	L	GANG CHANNEL MAKE FROM	B	NO. OF RIVETS PER ASSY (SEE NOTE 1)
	LDW280-11136-1	2	LDW280-11136-21	LDW280-11136-41	4 7/8	NAS688P-6-6	9/16	2
	-3	1	-23	-43	2 23/32	NAS688P-6-3	5/8	2
	-5	1	-25	-43	2 3/16	NAS688P-6-3	11/32	2
	-7	1	-27	-45	3 3/16	NAS688P-6-4	15/32	2
	-9	2	-29	-47	1 11/16	NAS688P-6-2	3/8	2
	-11	1	-31	-47	1 13/16	NAS688P-6-2	7/16	2
	-13	2	-33	-49	3 11/16	NAS688P-6-5	11/32	2
	-15	1	-35	-63	2 5/8	NAS688P-6-3	9/16	2
(C3) SEE DETAIL A	-19	1	-39	-67	3 1/16	NAS688P-6-4	13/32	3
(C6) SEE DETAIL B	-51	1	-57	-69	8 1/4	NAS688P-6-11	23/32	10
	-53	1	-59	LDW280-11136-71	5 5/8	NAS688P-6-7	9/16	6
(C10) (C9)	LDW280-11136-81	1	LDW280-11136-73	LDW280-11136-77	4 7/8	NAS688P-6-6	9/16	5

01 NAS 9-1100


65
3/4
19/32
11/32
11/32
5/16
1/16 R
1/8 R
.097-.102 (#40 DRILL)
11/32
3/16 x 45° CHAMFER
(C2) GR501A-4B (3) FOR LM-7 THRU LM-15
GR500A-4C (3)
1/4 R
37
.040 (REF)
1/8 R (TYP)
2 15/16
1/4 (REF)
23/32
1/2 CONSTANT

(C5) LDW280-11136-17 ASSY

46 1/16 R ± 1/8

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS 1 1/2 D	✓
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-11136	C
SCALE FULL			SHEET 3.00	

AAP

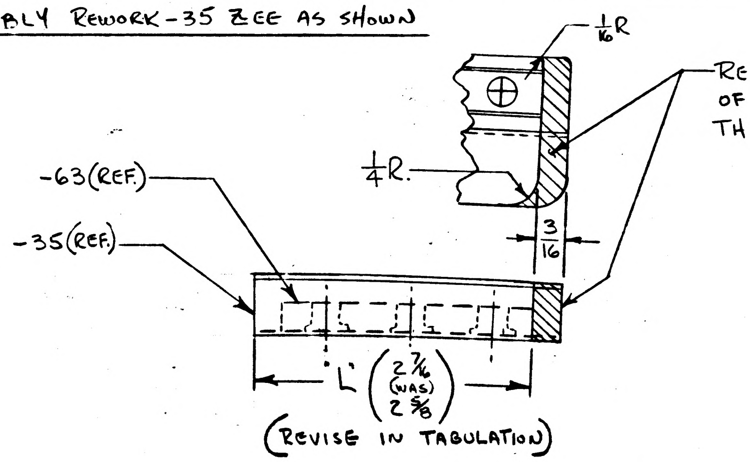
ENG 32A REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO LDW280-11136 | EO NO. D1
CONTROL INFO NO. LM-3-6990

ON - 15 ASSEMBLY REWORK -35 ZEE AS SHOWN



REMOVE SHADED PORTION OF -35 AS SHOWN ON THIS END ONLY.

(REVISE IN TABULATION)

REWORK NOTE -
BRUSH ALODINE REWORKED AREA PER LSP14-4010

DETAIL SPEC REQ ☐ | CL II ENGRG CHG ☑ | CL I ENGRG CHG ☐

(3)

REASON FOR EO
TO PROVIDE CLEARANCE WITH ADJACENT STRUCTURE ON CREW PROVISION INSTALLATION.

DESCRIPTION OF EO
ON-15 REVISED LENGTH OF -35 ZEE "L" DIM 2 7/16 (WAS) 2 5/8.

(R) GAEC EO RELEASE

MODEL	EFFECTIVITY M		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-11 (41)	
		THRU	
		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
DATE	7/3/69			7/3/69	7-17-69	BM 7-17-69	7/1/69	7-27-69
7-17-69								

PRIORITY: C
DRAWING TITLE: SUPPORT ASSEMBLY A/S - CABIN - EQUIP. LINES
DRAWING NO. LDW280-11136
EO NO. D1

ISSUED BY VPE/P. DUGAN X2151
SECTION VD1/F. DeRESPINIS
GROUP NO. 280
PL 25

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11136
EO NO. D2
CONTROL INFO NO. LM-3-6996

· ON -51 ASSY

IN TABULATION BOX FOR -69 GANG CHANNEL REVISE "B" DIM. TO $\frac{3}{8}$ (WAS) $\frac{23}{32}$.

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐

REASON FOR EO
TO PROVIDE CORRECT LOCATING DIM. FOR -69 GANG CHANNEL.

DESCRIPTION OF EO
ON -51 ASSY
-69 GANG CHANNEL "B" DIM $\frac{3}{8}$ (WAS) $\frac{23}{32}$

(3)
(R) GAEC EO RELEASE
JK 8-2-69

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-11 (41)	
		THRU	
		LM-15 (45)	

EFFECTIVITY M

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO ☐
DISPOSITION OF PARTS: REWORK ✓ SCRAP ☐

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY	F.N.R.			—	J.K.	BM		
DATE	8-2-69			✓	7/23/69	7-24-69	8/1/69	7/28/69
7-23-69								

PRIORITY C
DRAWING TITLE SUPPORT ASSEMBLY A/S - CABIN - EQUIP. LINE
DRAWING NO. LDW280-11136
EO NO. D2

ISSUED BY VPE / P. DUGAN X2151
SECTION VDI / F. DeRESPINIS
GROUP NO. 280
PL 25

01

NAS 9-1100

LDW280-11137 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23051	LTA-3(13)	1 EA

PART NO. LDW280-11137-3,-5&-7

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54051	LM-15(45)	2
		LM-14(44)	2
		LM-13(43)	2
		LM-12(42)	2
		LM-11(41)	2
		LM-10(40)	2
		LM-9(39)	2
		LM-8(38)	2
		LM-7(37)	2
		LM-6(36)	2
		LM-5(35)	2
	LDW280-54051	LM-4(34)	2
	LDW280-53051	LM-3(33)	3
LM	LDW280-23051	LTA-3(13)	3

PART NO. LDW280-11137-9 — GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54051	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
LM	LDW280-54051	LM-4(34)	1

PART NO. LDW280-11137-11 — GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54051	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM 5(35)	1
	LDW280-54051	LM-4(34)	1
	LDW280-53051	LM3(33)	2
LM	LDW280-23051	LTA-3(13)	1

PART NO. LDW280-11137-1 — GAEC SCH NO. 32

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	B	B	B		B				
SHEET		1.01							
REV		B							
SHEET									
REV									

LAST SECT LTR USED	—	GRUMMAN REL INFO B		
LAST DASH NO. USED	-43	PRIM NO.	JK(00)	EMF
		215	[illegible]	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ± 1/32 ±.020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 LINE ITEM 1 DOCUMENTATION TYPE II

DRAWN BY	P.CICOTTO 5/4	RELIABILITY	
LAYOUT BY			
CHECKED BY			
GRP LDR	PUSATERI, J 5/5		
VEH DES INT	BISCHOFF, W 5/10		
STRUCTURES	BUNCE, F 5/13	PROJ ENGR	ALBERT, J 5/16
STRUCTURES	HILDERMAN, R 5/14	REL GROUP	CARAMANICA, A 5/21
WEIGHTS	ROBESCH, D 5/7		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT ASSEMBLY
ASCENT STAGE~CABIN
EQUIPT LINES (B)

SIZE B CODE IDENT NO. 26512 LDW280-11137 B
SCALE NONE SHEET 1.00 OF 5

ENG 77.1 12-65

SUPERSEDES LDW280-11137 NO CHG 5/21/66

01 NAS 9-1100

LDW280-11137 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54051	LM-15(45)	2
↑	↑	LM-14(44)	2
		LM-13(43)	2
		LM-12(42)	2
		LM-11(41)	2
		LM-10(40)	2
		LM-9(39)	2
		LM-8(38)	2
		LM-7(37)	2
		LM-6(36)	2
↓	↓	LM-5(35)	2
LM	LDW280-54051	LM-4(34)	2
PART NO. LDW280-11137-13 & 15		GAEC SCH NO.	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET									
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED

GRUMMAN REL INFO

PRIM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO.
LINE ITEM
DOCUMENTATION TYPE
DRAWN BY
LAYOUT BY
CHECKED BY
PROJ ENGR
REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11137	B ®
SCALE	NONE	SHEET 1.01	

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ________

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED NO CHG LAST REV NC, LOFTED DWG WAS DIMENSIONED ADDED SHEETS 1.10, 2.00 & 3.00	JE SAITIS 9-30-66					
A	1	1.00, 1.10						EO -A1	ON-9: CHANGED NO. REQ'D ON: LTA 3(13), LM-4(34); 5(35), LM-6(36) (1 WAS 3) LM-3(33) (3 WAS 5)	LTA-3, LM-3 THRU-6		-9	JESAITIS 9-30-66 GB		
	2	1.00, 1.10						EO -A2 ®	IN M/B FOR LEM-4, -5 & -6 REMOVED REQMTS FOR -3, -5 & -7 (1 EACH); ADDED FOR LEM 4 THRU -15, 1 REQD OF -1, 3 OF -9 (WAS) LEM 4 THRU LEM 6, 2 REQD OF -1, 3 REQD OF -9	LEM -4 THRU -15		✓			
B	1	1.10, 1.00						LEO 280-318	REVISED QUANTITY OF LDW280-11137-1, 1 REQD WAS 2 REQD	LM-3(33)		-1	RICHARD ROSARIO 1-19-69		
	2	1.00, 1.10						LEO 280-319	ON -3 & -5: REMOVED LM-3 REQUIREMENTS			-3, -5			
	3	1.00, 1.10						LEO 280-338	ON -1 QTY REQD (2) WAS (1), ON -7 REMOVED ALL LM-3 REQMTS.			-7			
	4	1.10, 2.00 3.00						LEO 280-477	ON LDW 280-11137-1 & -9 RIVET GR501A-4B WAS GR500A-4C	LM-7 THRU LM-15	✓				
	5	1.00, 1.10 2.00, 3.00					✓	EO B5	CREATED -11 & -41, REMOVED LM-4(34) THRU LM-15(45) EFF FROM -9 (-11 MAY BE MADE FROM -9) ADDED SH 1.01	LM-4 THRU LM-15	NOTED				
	6	1.00, 1.10 2.00, 3.00		A		✓		EO B6 LCD 1784	ADDED -41, -11 ASSY, MS20426AD3-2(2) & NAS680-A08.		NOT	REQD			
	7	1.10, 3.00				✓		EO B7, LCD 1784	REF EO B6: ON-41 IN FLD, ADDED 1/4 R (TYP) (4) & 3/64 R (TYP) (4)		✓				
	8	1.00 1.10 2.00 3.00					✓	EO B8	REF EO B5: -43 WAS -41, -13 WAS -11, 2 REQD/MOD FOR -13 WAS 1 REQD/MOD FOR -11, 1 REQD/MOD FOR -9 ON LM-4 THRU LM-15 WAS REMOVE 3 REQD/MOD FOR -9 ON LM-4 THRU LM-15.						
	9	1.00 1.10					✓	EO B9	REF EO B8: "FOR -9 QTY REQD/MOD (3) S/B (2)" WAS "QTY REQD/MOD (3) S/B (1)"						
	10	1.00, 1.10, 2.00, 3.00		E			✓	EO B10, LCD 1078 ®	CREATED -15 ASSY. ADDED LDW280-11137-45 (1) MS20426AD3 (2) NAS680-A08 (1)		NOT	REQD	RMS		

CHG APPROVED

LTR	GROUP LDR	VEHICLES INT	STRUCTURES	STRUCTURES	WEIGHTS	PROJ ENGR				
A										
B										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11137	B ®
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

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NAS 9-1100

-15	-13	-11	-9	-7	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
1		1							NAS680A08	E	PLATE NUT	STD PART						
									MS20426AD3	E	RIVET							
	2		2				4		GR501A-4B	E	RIVET							
	2		2	4	3	4	4		GR500A-4C	E	RIVET	STD PART						
									LDW280-11137-15		SUPPORT ASSY					NONE	NONE	
1									LDW280-11137-45	E	ZEE	AL ALLOY SH	QQ-A-250/12	7075-0	.050 X 2 X 3	T6	88	
	1								-43		ZEE	AL ALY SH	QQ-A-250/4	2024-T3	.040 x 3 x 3	NONE	88	
		1							-41		ZEE	AL ALY SH	QQ-A-250/4	2024-T3	.040 x 2 x 3	NONE	88	
			1						-39		GANG CHANNEL	NAS688P-6-2	STANDARD		ACT. LGTH = 1 3/4			
				1					-37			NAS688P-6-8			ACT. LGTH = 5 15/16			
					1				-35			NAS688P-6-6			ACT. LGTH = 4 7/16			
						1	1		-33		GANG CHANNEL	NAS688P-6-8	STANDARD		ACT. LGTH = 5 15/16			
							1		-17		ZEE	AL ALY SH	QQ-A-250/4	2024-T3	.040 x 2 1/2 x 6 3/4	NONE	88	
			1						-25						.040 X 2 1/2 X 2 3/4			
				1					-23						.040 X 2 5/8 X 6 3/4			
					1				-21						.040 X 2 5/8 X 5 1/4			
						1			-19		ZEE	AL ALY SH	QQ-A-250/4	2024-T3	.040 X 2 1/2 X 7		88	
									-13		SUPPORT ASSY						NONE	
									-11									
									-9									
									-7									
									-5									
									-3									
									LDW280-11137-1	E	SUPPORT ASSY					NONE	NONE	

QTY PER ASSEMBLY

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030
						T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11137	B (B)

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

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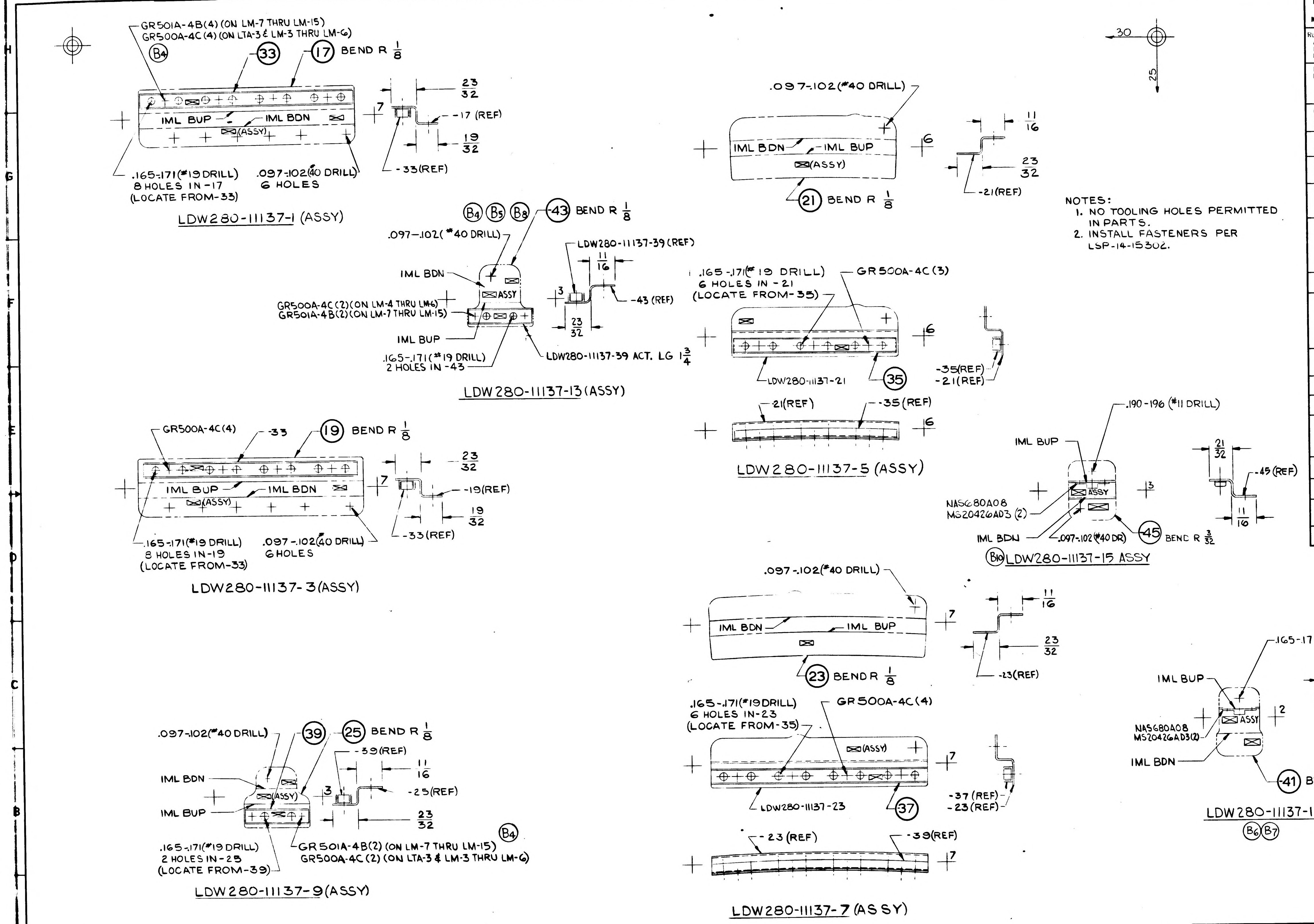
NAS 9-1100


GR501A-4B(4) (ON LM-7 THRU LM-15)
GR500A-4C(4) (ON LTA-3 & LM-3 THRU LM-6)
B4
33
17 BEND R 1/8
IML BUP
IML BDN
(ASSY)
23/32
7
-17 (REF)
19/32
-33(REF)
.165-.171(#19 DRILL) 8 HOLES IN -17 (LOCATE FROM-33)
.097-.102(#40 DRILL) 6 HOLES
LDW280-11137-1 (ASSY)
B4 B5 B8
43 BEND R 1/8
.097-.102(#40 DRILL)
IML BDN
ASSY
GR500A-4C(2)(ON LM-4 THRU LM-6)
GR501A-4B(2)(ON LM-7 THRU LM-15)
IML BUP
.165-.171(#19 DRILL) 2 HOLES IN -43
LDW280-11137-39 (REF)
11/16
3
-43 (REF)
23/32
LDW280-11137-39 ACT. LG 1 3/4
LDW280-11137-13 (ASSY)
GR500A-4C(4)
-33
19 BEND R 1/8
IML BUP
IML BDN
(ASSY)
23/32
7
-19(REF)
19/32
-33(REF)
.165-.171(#19 DRILL) 8 HOLES IN-19 (LOCATE FROM-33)
.097-.102(40 DRILL) 6 HOLES
LDW280-11137-3(ASSY)
.097-.102(#40 DRILL)
39
25 BEND R 1/8
IML BDN
(ASSY)
IML BUP
-39(REF)
11/16
3
-25(REF)
23/32
B4
.165-.171(#19 DRILL) 2 HOLES IN-25 (LOCATE FROM-39)
GR501A-4B(2) (ON LM-7 THRU LM-15)
GR500A-4C(2) (ON LTA-3 & LM-3 THRU LM-6)
LDW280-11137-9(ASSY)
.097-.102(#40 DRILL)
IML BDN
IML BUP
(ASSY)
6
11/16
23/32
-21(REF)
21 BEND R 1/8
.165-.171(#19 DRILL) 6 HOLES IN -21 (LOCATE FROM-35)
GR500A-4C(3)
6
LDW280-11137-21
35
-35(REF)
-21(REF)
-21(REF)
-35(REF)
6
LDW280-11137-5 (ASSY)
.097-.102(#40 DRILL)
IML BDN
IML BUP
7
11/16
23/32
-23(REF)
23 BEND R 1/8
.165-.171(#19DRILL) 6 HOLES IN-23 (LOCATE FROM-35)
GR500A-4C(4)
(ASSY)
7
LDW280-11137-23
37
-37(REF)
-23(REF)
-23 (REF)
-39(REF)
7
LDW280-11137-7 (ASSY)
30
25
.190-.196 (#11 DRILL)
IML BUP
ASSY
3
NAS680A08
MS20426AD3 (2)
IML BDN
.097-.102(#40 DR)
45 BEND R 3/32
21/32
-45(REF)
11/16
B10 LDW280-11137-15 ASSY
.165-.171 (#19 DRILL)
IML BUP
ASSY
2
NAS680A08
MS20426AD3(2)
IML BDN
41 BEND R 1/8
21/32
-41(REF)
11/16
LDW280-11137-11 (ASSY)
B6 B7

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. INSTALL FASTENERS PER LSP-14-15302.

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	√
TOLERANCE ON LOFTED DELINEATIONS IS 1/32	√

LDW280-11137 B

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LM	SIZE F	CODE IDENT NO. 26512	LDW280-11137	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

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NAS 9-1100

AAD

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW280-11137
EO NO. C1
CONTROL INFO NO. LM-5- 21652

IN MOD/BLK FOR -13 & -15 QUANTITY 2 S/B 1
N/A LDW280-54051

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☒	CL I ENGRG CHG	☐

(5)

REASON FOR EO: TO AGREE WITH N/H/A REQUIREMENTS

DESCRIPTION OF EO: IN MOD/BLK FOR -13 & -15 QUANTITY 1 (WAS) 2.

GAEC EO RELEASE: SK

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM-4 (34)	
LM		THRU	
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
✓			✓

APPROVED BY				RLT	RH	CK		Bott
DATE	5-2-69			4-29-69	4-28-69	4-28-69	5/6/69	4/29/69
	VD1	SUPPORT	RELIAB. GROUP	~~GROUP~~ LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~[illegible]~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SUPPORT ASSY ~ A/S ~ CABIN EQUIP LINES	LDW280-11137	C1

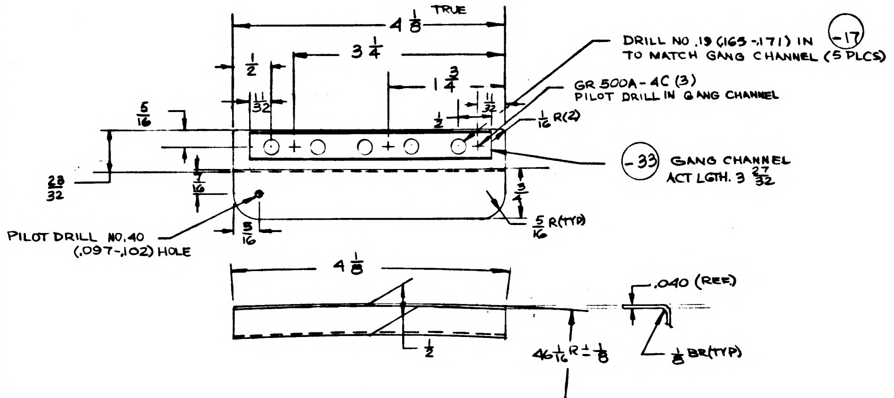
ISSUED BY LIAISON C Rissland x86755 SECTION VDI GROUP NO. 280 PL 25

01 NAS 9-1100

REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION · GRUMMAN INFO ONLY · DCAF OR ECP	CLASS II	CLASS I	011 SPEC REQ	ENGRG ORDER	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MODULE NUMBER	DISPOSITION OF EXIST PARTS · RE-WORK	SCRAP	ENGRG APPD	GOVT APPD

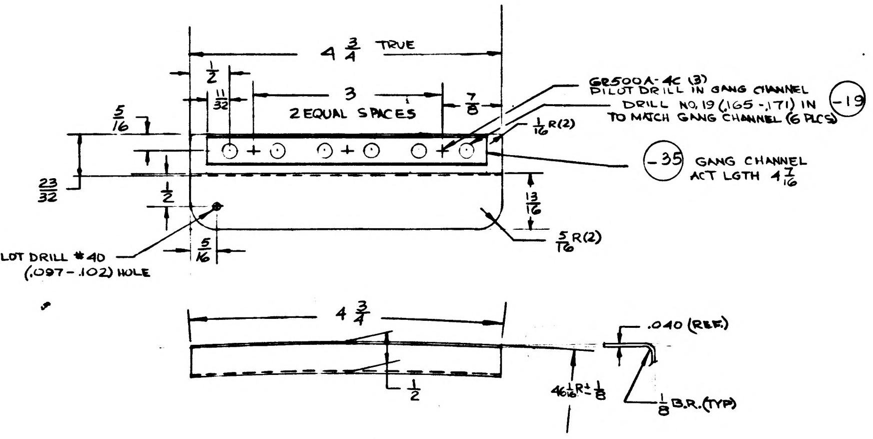
MANUFACTURING OPERATIONS

NOTES CHECKED ✓ APPLY TO THIS DWG.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.	
250 FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
RUBBER STAMP PART NUMBER ~~AND ALL OTHER MARKINGS~~ IN ~~REGION MARKED~~ ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R − .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS 1½ D	✓
SYMBOL ∱ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓



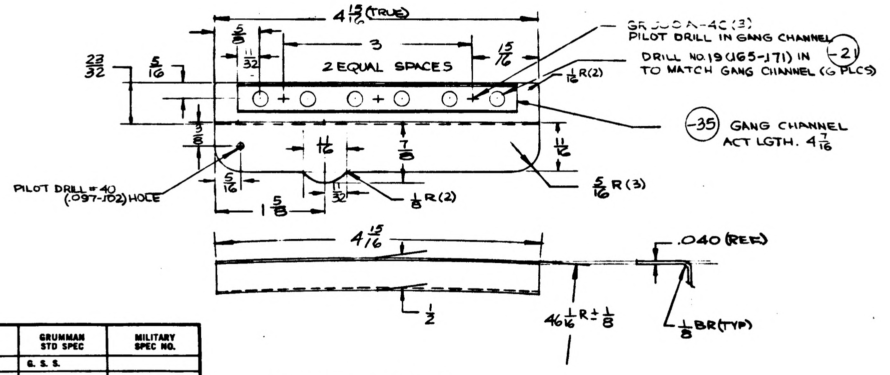
4 1/8 TRUE
3 1/4
1/2
11/32
1 3/4
11/32
1/2
5/16
23/32
1/16
3/4
5/16
DRILL NO. 19 (.165-.171) IN TO MATCH GANG CHANNEL (5 PLCS)
-17
GR 500A-4C (3) PILOT DRILL IN GANG CHANNEL
1/16 R(2)
-33 GANG CHANNEL ACT LGTH. 3 27/32
5/16 R(TYP)
PILOT DRILL NO. 40 (.097-.102) HOLE
4 1/8
.040 (REF)
1/2
46 1/16 R ± 1/8
1/8 BR(TYP)

LDW280-11138-1



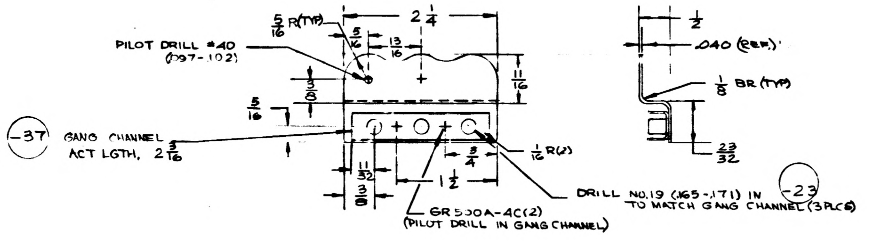
4 3/4 TRUE
1/2
11/32
3
2 EQUAL SPACES
7/8
5/16
23/32
1/2
13/16
5/16
GR500A-4C (3) PILOT DRILL IN GANG CHANNEL
DRILL NO. 19 (.165-.171) IN TO MATCH GANG CHANNEL (6 PLCS)
-19
1/16 R(2)
-35 GANG CHANNEL ACT LGTH 4 7/16
5/16 R(2)
PILOT DRILL #40 (.097-.102) HOLE
4 3/4
.040 (REF)
1/2
46 1/16 R ± 1/8
1/8 B.R.(TYP)

LDW280-11138-3



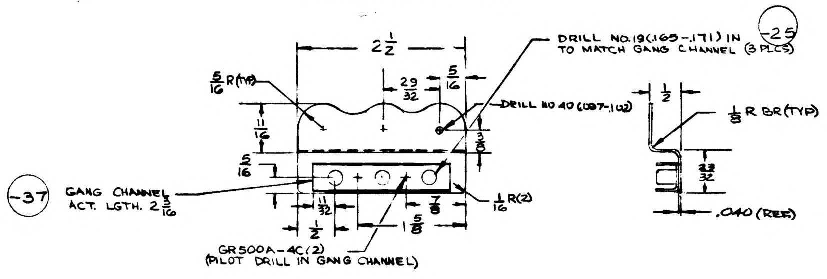
4 15/16 (TRUE)
5/8
11/32
3
2 EQUAL SPACES
15/16
23/32
5/16
3/8
11/16
7/8
11/16
5/16
11/32
1 5/8
GR500A-4C (3) PILOT DRILL IN GANG CHANNEL
DRILL NO. 19 (.165-.171) IN TO MATCH GANG CHANNEL (6 PLCS)
-21
1/16 R(2)
-35 GANG CHANNEL ACT LGTH. 4 7/16
5/16 R(3)
1/8 R(2)
PILOT DRILL #40 (.097-.102) HOLE
4 15/16
.040 (REF)
1/2
46 1/16 R ± 1/8
1/8 BR(TYP)

LDW280-11138-5



5/16 R(TYP)
2 1/4
5/16
13/16
PILOT DRILL #40 (.097-.102)
11/16
3/8
5/16
-37 GANG CHANNEL ACT LGTH. 2 3/16
1/16 R(2)
3/4
11/32
1 1/2
3/8
GR500A-4C(2) (PILOT DRILL IN GANG CHANNEL)
DRILL NO. 19 (.165-.171) IN TO MATCH GANG CHANNEL (3 PLCS)
-23
1/2
.040 (REF)
1/8 BR (TYP)
23/32

LDW280-11138-7



2 1/2
5/16 R(TYP)
29/32
5/16
DRILL NO. 19 (.165-.171) IN TO MATCH GANG CHANNEL (3 PLCS)
-25
DRILL NO 40 (.097-.102)
11/16
3/8
5/16
-37 GANG CHANNEL ACT. LGTH. 2 3/16
11/32
7/8
1/2
1 5/8
1/16 R(2)
GR500A-4C(2) (PILOT DRILL IN GANG CHANNEL)
1/2
1/8 R BR(TYP)
23/32
.040 (REF)

LDW280-11138-9

NAS 9-1100

-9	-7	-5	-3	-1	PART OR IDENTIFYING NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE
2	2	3	3	3	GR500A-4C	E		RIVET	GRUMMAN STD							
1	1				LDW280-11138-37			GANG CHANNEL	NAS688P-6-3	STD. PART		ACT LGTH = 2 3/16				
		1	1		-35			GANG CHANNEL	NAS688P-6-6	STD. PART		ACT LGTH = 4 7/16				
				1	-33			GANG CHANNEL	NAS688P-6-5	STD. PART		ACT LGTH = 3 27/32				
1					-25			ZEE	AL. ALLOY	QQ-A-355	2024-T3	.040 × 2 1/2 × 3 1/4	NONE	88		
	1				-23							.040 × 2 1/2 × 3				
		1			-21							.040 × 2 5/8 × 5 3/4				
			1		-19							.040 × 2 5/8 × 5 1/2				
				1	-17			ZEE	AL. ALLOY	QQ-A-355	2024-T3	.040 × 2 5/8 × 4 3/4	NONE	88		
					-9			SUPPORT ASSY								
					-7											
					5											
					-3											
					LDW280-11138-1	E		SUPPORT ASSY								

QTY REQ'D PER ASSY

TO BE REDRAWN ON PRODUCTION FORMAT 3

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	~~G. S. S.~~ LSP14-9030	

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

ENG. 000
5-65

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE	MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE	MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
				LEM	LDW280-54051	LEM 4(34), 5(35), 6(36)	1 EA	LEM	LDW280-54051	LEM 4(34), 5(35) 6(36)	1 EA
				LEM	LDW280-53051	LEM 3(33)	1 EA	LEM	LDW280-53051	LEM 3(33)	1 EA
				LEM	LDW280-23051	LTA 3(13)	1 EA	LEM	LDW280-23051	LTA 3(13)	1 EA
PART NO.		GRUMMAN SCH INFO		PART NO. LDW280-11138-5, -7, -9		GRUMMAN SCH INFO 31-3		PART NO. LDW280-11138-1, -3		GRUMMAN SCH INFO 31-3	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE UNLESS SPECIFIED
FRACTIONS · DECIMALS · ANGLES
± 1/32 ± .020 ± 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	
GRUMMAN REL INFO	
PRIM. NO.	(001)
215	MP12 · BK-3.16

DRAWN BY	P. CICCOTTO	3/6
CHECKED BY		
LAYOUT BY		
GRP LDR		5/6
VDI		5/
STRUCT		5/13
STRUCT		5/14
WEIGHTS		5/7
RELIABILITY		
PROJ. ENG.		5/18
RELEASE		5/21

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L.I., N.Y.

SUPPORT ASSEMBLY
ASCENT STAGE-CABIN-EQUIPT LINES

CONTRACT NO. NAS 9-1100 DOCUMENTATION TYPE II

CODE IDENT NO.	SIZE	
26512	F	LDW 280-11138
SCALE	LINE ITEM	SHEET 1 OF 1

01

ENG 32.1 REV 3-65

*

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280	EO NO. 287
CONTROL INFO NO. LDW 280 A0438	

REMOVE LEM 4, 5, & 6 REQUIREMENTS FOR THE NOTED DASH NUMBERS OF THE FOLLOWING DRAWINGS: RESTRICT TO LTA-3, & LEM-3.

PART NUMBER	DASH NO. *	CHG. NO.	TITLE
✓ LDW280-11134	-1, -3, -5, -7	A1	SUPPORT ASSY - ASCENT STAGE - CABIN EQUIP. LINES
✓ LDW 280-11138	-1, -3, -5, -7, -9	A1	↓
LDW 280-11282	-1, -3, -5, -7, -9	A1	↓

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: TO UPDATE WIRING SUPPORT BRACKETS TO ACCOMODATE LEM4 & SUBSEQUENT LINE RUNS.

DESCRIPTION OF EO: REMOVE LEM 4, 5, 6 REQUIREMENTS ON - *

GAEC EO RELEASE: LE 10-5

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
		LEM-6 (36)	
		LEM-5 (35)	
LEM		LEM-4 (34)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			✓

APPROVED BY		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
DATE	9-15-66			9-19-66	9-19		10-4-66	10/?/66
✓	V.D.I.							

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	NOTED	LEO 280	287

ISSUED BY P. ABRAMS X1441 9/15/66 SECTION VDI GROUP NO. 335 PL 35

01

NAS 9-1100

LDW280-11139 B

PART NO. LDW280-11139-3

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW 280-23051	LTA-3(13)	1

PART NO. LDW280-11139-9

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-54051	LEM-15(45)	2
		LEM-14(44)	2
		LEM-13(43)	2
		LEM-12(42)	2
		LEM-11(41)	2
		LEM-10(40)	2
		LEM-9(39)	2
		LEM-8(38)	2
		LEM-7(37)	2
		LEM-6(36)	2
		LEM-5(35)	2
	LDW280-54051	LEM-4(34)	2
	LDW280-53051	LEM-3(33)	2
LEM	LDW280-23051	LTA-3(13)	2

PART NO. LDW280-11139-7

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-54051	LEM-15(45)	2
		LEM-14(44)	2
		LEM-13(43)	2
		LEM-12(42)	2
		LEM-11(41)	2
		LEM-10(40)	2
		LEM-9(39)	2
		LEM-8(38)	2
		LEM-7(37)	2
		LEM-6(36)	2
		LEM-5(35)	2
	LDW280-54051	LEM-4(34)	2
	LDW280-53051	LEM-3(33)	11
LEM	LDW280-23051	LTA-3(13)	5

PART NO. LDW280-11139-11

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54051	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
LM	LDW280-54051	LM-4(34)	1

PART NO. LDW280-11139-1

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53051	LEM3(33)	1
LEM	LDW280-23051	LTA-3(13)	1
		31	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -41

GRUMMAN REL INFO B

PRIM NO. 215 K(001) ME-38-12/19/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM NO 1
DOCUMENTATION TYPE II
(5)

DRAWN BY	P.CICOTTO 5·2·66 P.A. 9-15	RELIABILITY	
LAYOUT BY			
CHECKED BY	JRT		
GROUP LDR	J.PUSATERI 5·5·66		
VEH.DES.INT	W.BISCHOFF 5·8·66		
STRUCTURE	FEB JV	PROJ ENGR	J.ALBER · RMC 5·18
STRUCTURE	HILDERMAN 5·14·66	REL GROUP	A.CARAMANICA 5·19
WEIGHT	DJL ROBESCH		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT ASSY
ASCENT STAGE - CABIN - EQUIPMENT LINES

SIZE B | CODE IDENT NO. 26512 | LDW280-11139 | B

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11139 N/C 5-2-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
		RETRACED NO CHANGE LAST REVISION N/C LOFTED DWG WAS DIMENSIONED DWG. SH 1 OF 4 WAS 1 OF 1 ADDED SH 1.10, 2.00 & 3.00 E O'CONNELL 8-5-66													
A	1	1.00, 1.10 2.00, 3.00						EO A1	FOR -7 CHANGED NO. REQ'D. FOR LTA-3(13), LEM-4 (34) LEM-5 (35) LEM-6 (36) QTY 5 WAS 4. LEM-3 (33) QTY 9 WAS 8. REMOVED -5 REQUIREMENTS	NOTED		-5 S.B.	O'CONNELL 8-5-66		
	2	1.00, 1.10							IN MOD BLOCK, FOR -1 & -3, REMOVED LEM-4, -5 & -6 EFF., FOR -7, REVISED QTY REQD, WAS 5; FOR -7 & -9 ADDED LEM-7 THRU -15 EFF.	NOTED		✓	DAGOS 8-30-66		
B	1	1.00						LEO 280-319	REMOVE LEM 3 REQUIREMENTS FOR -3	LM3(33)		✓	B. ACUNTO 12-15-68		
	2	1.00						LEO 280-338	ON -7 QUANTITIES 10 WAS 11	LM3(33)		✓			
	3	1.00						LEO 280-339	ON -7 QUANTITIES 11 WAS 9	LM3(33)	NOTED				
	4	2.00 3.00	C4 C6					LEO 280-477	CHANGE GR500A-4C RIVETS TO GR501A-4B	LM-7(37) THRU LM-15(45)	✓				
	5	3.00	B4				✓	EO B5	IN FLD SH 3, ZONE B4, TRIMMED -23 ZEE	LM-6(36) THRU LM-15(45)	✓				
	6	1.00					✓	EO B6	REF EO B5, ON -23 ADDED LM-4(34) & LM-5 (35) EFFECTIVITY. EFFECTIVITY WAS LM-6 THRU LM-15	LM-4(34) LM-5(35)	✓				
	7	1.00 2.00 3.00	A4 C5				✓	EO B7	ADDED -41 DETAIL -11. ON -7, (2) REQD WAS (3) REQD FOR N/A LDW28-54051 (-11 MAY BE MADE BY REWORKING -7).	LM-4(34) THRU LM-15(45)	NOTED		E.C.G.		

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11139	B
SCALE NONE			SHEET 1.10

01

NAS 9-1100

-11	-9	-7		-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
2	2	2					GR501 A-4B	E	RIVET	GRUMMAN STD.						
				7	9		GR500A-4C	E	RIVET	GRUMMAN STD.						
1	1	1					LDW280-11139-39	E	NUT	NAS688P-6-2			ACT LG 1 3/4			
				1			-35			NAS688P-6-14			ACT LG 10 7/8			
					1		-33		NUT	NAS688P-6-18			ACT LG 13 7/16			
1							-41		ZEE	ALALY SH	QQ-A-250/4	2024-T3	.040×2 1/2×2 3/4	NONE	88	
	1						-25						.040×2 1/2×2 3/4	NONE	88	
		1					-23						.040×2 1/2×2 3/4			
				1			-19						.040×2 5/8×11 3/8			
					1		-17		ZEE	ALALY SH	QQ-A-250/4	2024-T3	.040×2 1/2×14 1/2	NONE	88	
							-11		SUPPORT ASSY					NONE	NONE	
							-9							NONE	NONE	
							-7							NONE	NONE	
							-3							NONE	NONE	
							LDW280-11139-1	E	SUPPORT ASSY					NONE	NONE	
QTY PER ASSEMBLY																

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ALODINE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-11139
B
SCALE NONE
SHEET 2.00

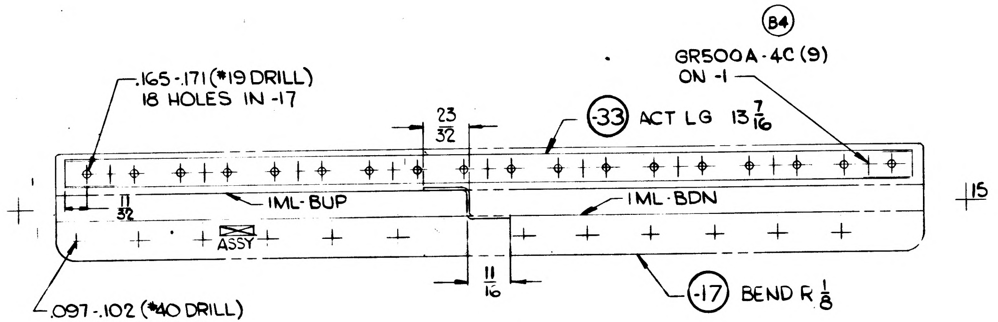
ENG 77.2 7-65

01

NAS 9-1100

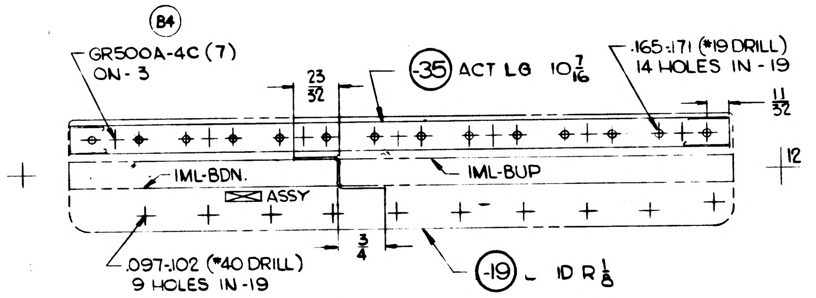
NOTES

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. INSTALL GR500A & GR501A FASTENER PER LSP 14-15303.



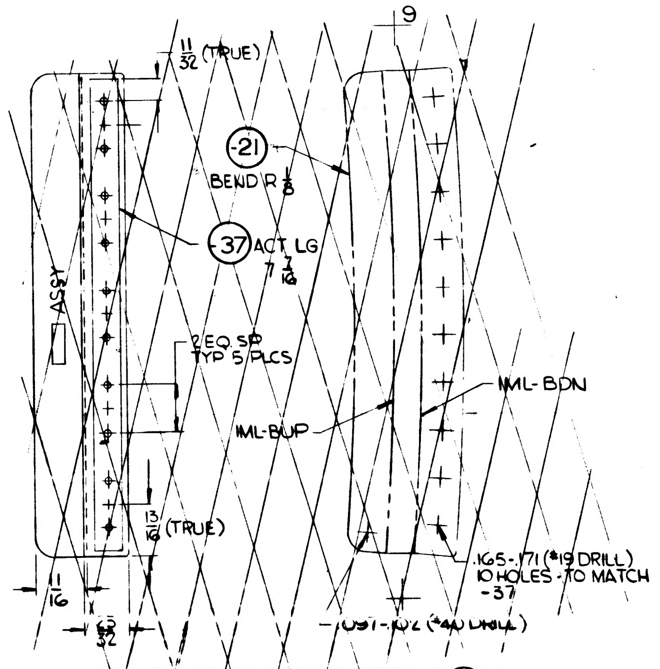
B4
GR500A-4C (9)
ON -1
.165-.171 (#19 DRILL)
18 HOLES IN -17
23/32
-33 ACT LG 13 7/16
11/32
IML-BUP
IML-BDN
ASSY
15
11/16
.097-.102 (#40 DRILL)
12 HOLES IN -17
-17 BEND R 1/8

LDW280-11139-1 ASSY



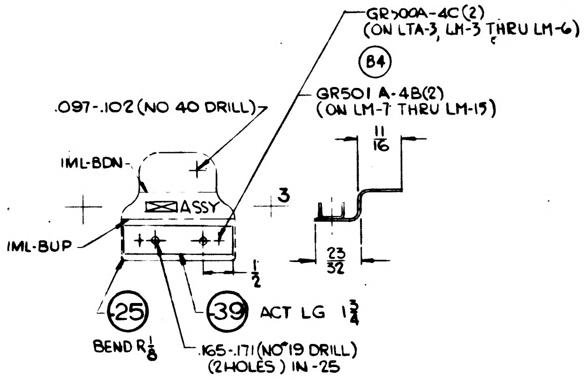
B4
GR500A-4C (7)
ON - 3
23/32
-35 ACT LG 10 7/16
.165-.171 (#19 DRILL)
14 HOLES IN - 19
11/32
12
IML-BDN.
IML-BUP
ASSY
3/4
.097-.102 (#40 DRILL)
9 HOLES IN -19
-19 ID R 1/8

LDW280-11139-3 ASSY



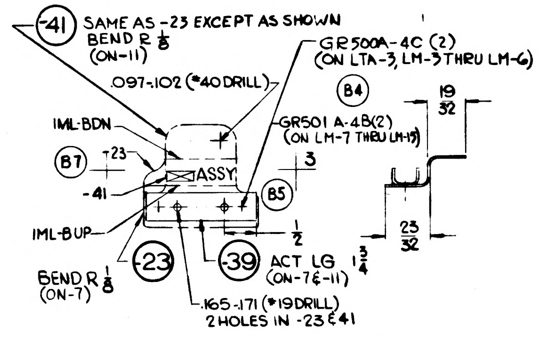
9
11/32 (TRUE)
-21
BEND R 1/8
-37 ACT LG 7 7/16
ASSY
2 EQ SP
TYP 5 PLCS
IML-BDN
IML-BUP
13/16 (TRUE)
11/16
23/32
.165-.171 (#19 DRILL)
10 HOLES - TO MATCH
-37
.097-.102 (#40 DRILL)

LDW280-11139-5 ASSY (A1)



GR500A-4C (2)
(ON LTA-3, LM-3 THRU LM-6)
B4
.097-.102 (NO 40 DRILL)
GR501 A-4B(2)
(ON LM-7 THRU LM-15)
11/16
IML-BDN
ASSY
3
IML-BUP
1/2
23/32
-25
BEND R 1/8
-39 ACT LG 1 3/4
.165-.171 (NO 19 DRILL)
(2 HOLES) IN -25

LDW280-11139-9 ASSY



-41 SAME AS -23 EXCEPT AS SHOWN
BEND R 1/8
(ON-11)
GR500A-4C (2)
(ON LTA-3, LM-3 THRU LM-6)
.097-.102 (#40 DRILL)
B4
19/32
IML-BDN
GR501 A-4B(2)
(ON LM-7 THRU LM-15)
B7
-23
3
ASSY
-41
B5
IML-BUP
1/2
23/32
BEND R 1/8
(ON-7)
-23
-39 ACT LG 1 3/4
(ON-7 & -11)
.165-.171 (#19 DRILL)
2 HOLES IN -23 & 41

LDW280-11139-7 ASSY (B7)

-11 ASSY, IDENT TO -7 EXCEPT AS SHOWN

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PT. NO. AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE IS 1 1/2 DIA.	✓
SYMBOL f DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LEM	SIZE F	CODE IDENT NO. 26512	LDW280-11139 B
MODEL OR END ITEM	SCALE FULL & NOTED		SHEET 3.00

FOR PHOTO REPRODUCTION

K2

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11139
EO NO. C1
CONTROL INFO NO. LM5-21653

IN MOD/BLK FOR -9 QUANTITY 2 S/B 1 (FOR LM-4 THRU LM-15)
N/A LDW 280-54051

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☒	CL I ENGRG CHG	☐

5)

REASON FOR EO: To AGREE WITH N/H/A REQUIREMENTS, (LDW280-54051 EO "A4")

DESCRIPTION OF EO: IN MOD/BLK FOR -9 QUANTITY 1 (WAS) 2.

GAEC EO RELEASE

EFFECTIVITY M

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-4 (3A)	
LM		THRU	
LM		LM-15 45)	

DRAWING CHANGE REQD: REVISE DWG ✓ · RECORD EO

DISPOSITION OF PARTS: REWORK · SCRAP ✓

APPROVED BY				RLT	RH			
DATE	5/2-69			4-29-69 KSS	4-28-69	4-28-69	5/6/69	4-29-69
	VD1	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~[illegible]~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SUPPORT ASSY ~ A/S ~ CABIN EQUIP. LINES	LDW280-11139	C1

ISSUED BY LIAISON C. RISSLAND X86755 SECTION VDI GROUP NO. 210 PL 25

01

NAS 9-1100

LDW280-11140 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28345	LM-3 (33)	2
↕	↕	LM-2 (32)	2
		LM-1 (31)	2
LM	LDW280-28345	LTA-8 (18)	2
PART NO. LDW280-11140-15		GAEC SCH NO. 32-6	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28345	LM-3 (33)	1 EA
↕	↕	LM-2 (32)	1 EA
		LM-1 (31)	1 EA
LM	LDW280-28345	LTA-8 (18)	1 EA
PART NO. LDW280-11140-11,-12,-13,-14		GAEC SCH NO. 32-6	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10
REV	A	A
SHEET	2.00	
REV	A	
SHEET	3.00	
REV	A	

LAST SECT LTR USED

LAST DASH NO. USED -15

GRUMMAN REL INFO A

PRIM NO. 215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ± 1/32 -±.010 -± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM I | DOCUMENTATION TYPE II

DRAWN BY	J. CARROLL 4-23-66		
LAYOUT BY	J. CARROLL 4-23		
CHECKED BY			
GR. LEADER	W. TRAUT 4-23		
VEH. DES. INT	W. BISCHOFF 4-25		
STRUCTURES	R. HILDERMAN 4-25	PROJ ENGR	J. ALBER 4-28
WEIGHTS	D. ROEBESCH 4-27	REL GROUP	CARAMANICA 5-2

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE - MID SECTION
PRESSURE TRANSDUCER ±Y22

SIZE B | CODE IDENT NO. 26512 | LDW280-11140 | A

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11140 REV. "N.C." 5-2-66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
								RETRACED	NO CHANGE LAST REV. "N.C." 11-18-66 R. LAMBERT LOFTED DWG. WAS DIM. ADDED SHEETS 1.10, 2.00, 3.00						
A	1.	1.00, 1.10 2.00, 3						EO-A1	ON -11, -12, -13, -14 & -15 ADDED LM-3 EFF. EG	LM-3	NOT	REQ'D.	LAMBERT 11-18		

CHG APPROVED

LTR	GROUP LDR	VEH. DES. INT	STRUCTURES	WEIGHTS
A	—			

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11140	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11140-15	E	CLIP	AL ALLOY SH	QQ-A-250/4	2024-T3	.032×1×4	NONE	88	
		↕ -14	↕	ANGLE	↕	↕	2024-T3	.032×2×3	NONE	88	
		↕ -13	↕	ANGLE	↕	↕	2024-T3	.032×2×3	NONE	88	
		↕ -12	↕	BRACKET	↕	↕	2024-O	.040×5×5	T42	88	
		LDW280-11140-11	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-O	.040×5×5	T42	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T42	AL. HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

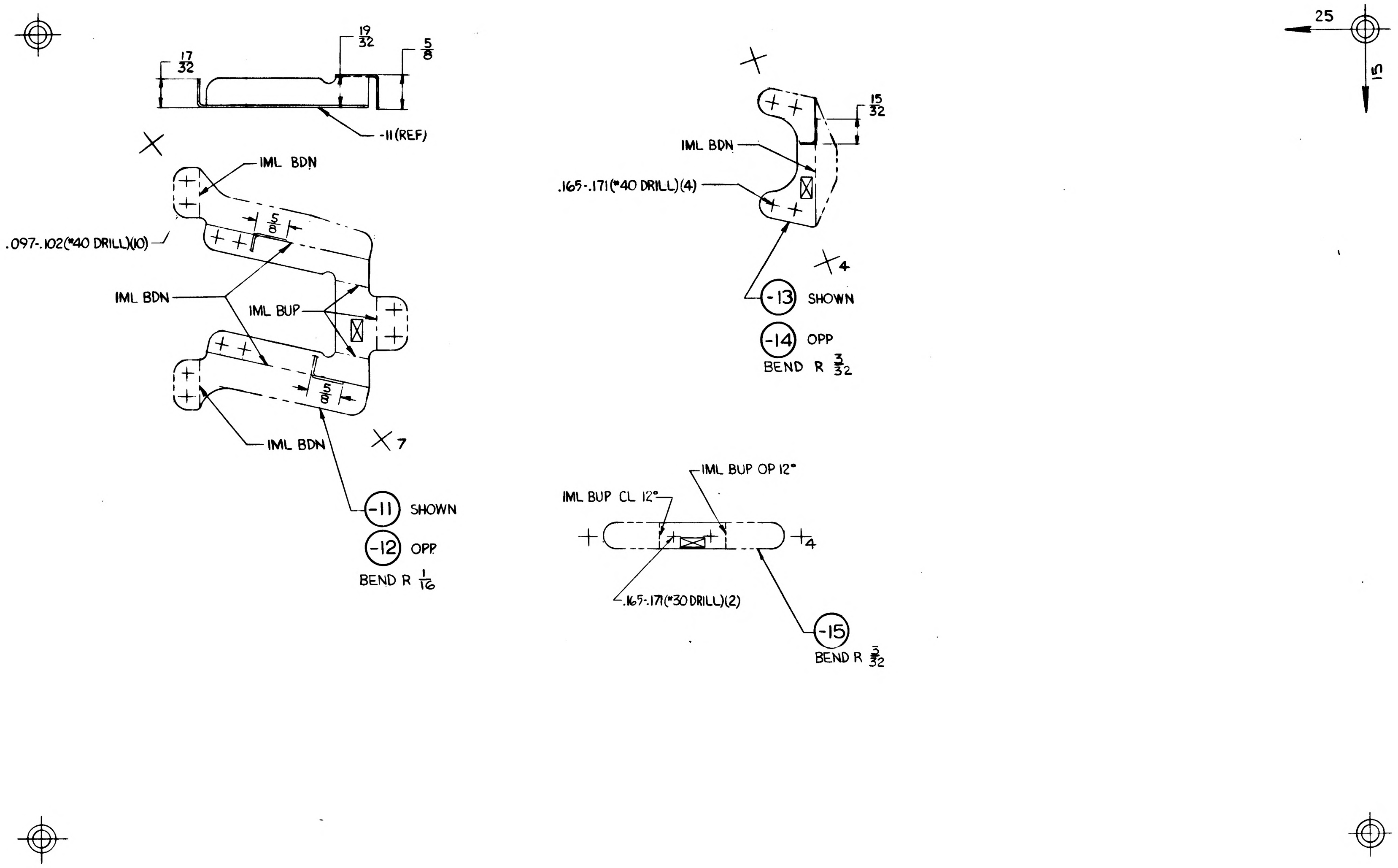
SIZE B
CODE IDENT NO. 26512
LDW280-11140
A

SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



17/32
19/32
5/8
-11 (REF)
IML BDN
.097-.102 (#40 DRILL)(10)
IML BDN
IML BUP
IML BDN
X 7
(-11) SHOWN
(-12) OPP
BEND R 1/16
15/32
IML BDN
.165-.171 (#40 DRILL)(4)
X 4
(-13) SHOWN
(-14) OPP
BEND R 3/32
IML BUP OP 12°
IML BUP CL 12°
4
.165-.171 (#30 DRILL)(2)
(-15)
BEND R 3/32
25
15

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

TRAM
EA

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

LM	SIZE D	CODE IDENT NO. 26512	LDW280-11140	A
MODEL OR END ITEM	SCALE		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

LDW280-11140 A

01

NAS 9-1100

ENG 32.1 REV 3-65

E.R.

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

*

DWG. NO. LDW280-11140
EO NO. B1
CONTROL INFO NO. LDW280A-7689

DELETE -11,-12,-13,-14 & -15 FROM LM-3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD 1422

5

REASON FOR EO: XDUCER RELOCATED ON LM-3

DESCRIPTION OF EO: DELETED -11,-12,-13,-14 & -15

Ⓡ GAEC EO RELEASE C
JK 6/26/67

MODEL	EFFECTIVITY PROCURING ACTIVITY NO.	EFFECTIVITY GAEC UNIT NO.	EFFECTIVITY SUB CONTR UNIT NO.
LM		LM-3(33)	

DRAWING CHANGE REQD: ✓ REVISE DWG ☐ RECORD EO

DISPOSITION OF PARTS: ☐ REWORK ✓ SCRAP

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~[illegible]~~
APPROVED BY	[illegible]			FJDR	[illegible]		[illegible]	[illegible]
DATE	6/26			6/26/67	6-24		6/26	6-26-67

PRIORITY: C

DRAWING TITLE: BRACKET ASCENT STAGE MID SECT-PRESSURE XDUCER ±Y22

DRAWING NO.: LDW280-11140

EO NO.: B1

ISSUED BY VALENTINE 6/23/67 X7033 SECTION VEH. DES. INT GROUP NO. 335 PL 25

01

NAS 9-1100

4 3 2 1

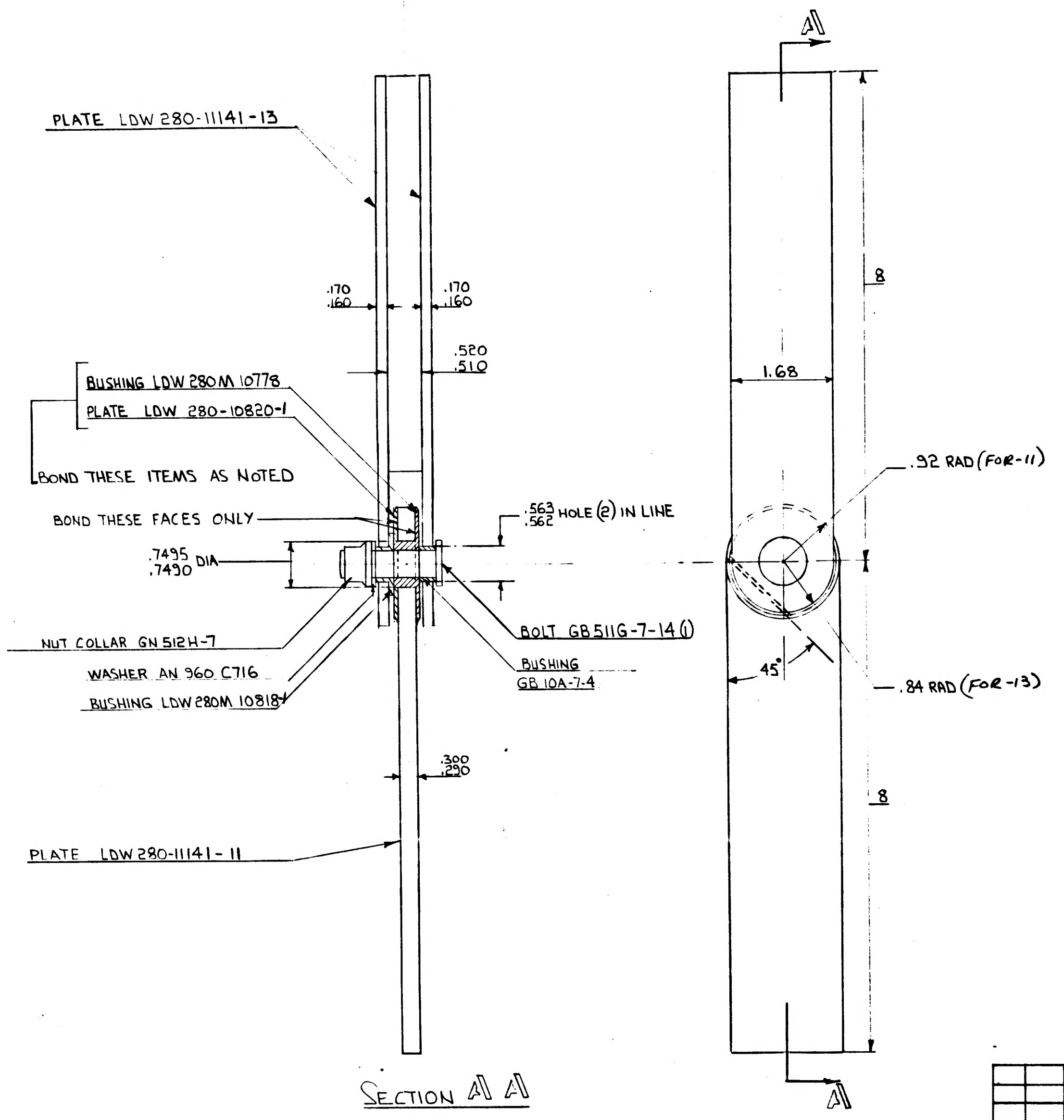
MANUFACTURING OPERATIONS

NOTES CHECKED ✓ APPLY TO THIS DWG.

- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.
- 125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.
- 250√ FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL ƒ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

REVISIONS

REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MODULE NUMBER	DISPOSITION OF EXIST PARTS: RE-WORK	SCRAP	ENGRG APPD	GOVT APPD
A	1							REMOVED N/A LDW280-23018, LDW280-53018 & MODULE NO LTA-3, LEM-3 FROM MOD BLK & ADDED TO NOTE 1(b) "(TOTAL 5 SPECIMENS PER VEHICLE)"	A. WILSON 7/29/66	NOTED	NOT REQD		7/30	



SECTION A A

NOTE'

1. BONDING TO BE ACCOMPLISHED IN ACCORDANCE WITH LSP 14-22500 SUPPLEMENTED AS FOLLOWS:
   (a) USE EC 2214 PASTE ADHESIVE (MINN, MINING & MFG. MINNEAPOLIS. MINN.) WITH A CURE OF 250°F FOR 90±10 MINUTES.
   (b) FABRICATE AND TEST TWO PROCESS CONTROL SPECIMENS AS SHOWN USING IDENTICAL METHODS OF HEAT AND PRESSURE APPLICATION (PRIOR TO BOND ON VEHICLE), AND THREE AFTER, MIN ACCEPTABLE FAILING LOAD ON SPECIMENS – 18600 LBS (TOTAL 5 SPECIMENS PER VEHICLE).
   (c) VEHICLE AND SPECIMEN BONDS TO BE SUBJECTED TO ULTRA SONIC INSPECTION IN ACCORDANCE WITH LSP 14-20000. NO RADIOGRAPHIC INSPECTION REQUIRED.

QTY REQ D PER ASSY		-1	PART OR IDENTIFYING NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE
		1	AN960 C716			WASHER								
		1	GN 512H-7			COLLAR								
		1	GB511G-7-14			BOLT								
		1	GB10A-7-4			BUSHING								
		1	LDW 280M-10818-1			BUSHING								
		1	LDW 280-10820-1			PLATE								
		1	LDW 280M 10778-1			BUSHING								
		2	LDW280-11141-13	E		PLATE	STEEL PLATE	AMS 6359	4340 PLATE	3/16 x 9 x 2	SHT	NONE		
		1	LDW280-11141-11	E		PLATE	AL ALLOY	MIL-A-8920	2219-T87	5/16 x 9 x 2		NONE		
			LDW280-11141-1	E		TEST SPECIMEN ASSY								

TO BE REDRAWN ON PRODUCTION FORMAT (3)

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	G. S. S.	

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
SHT	STEEL HEAT TREAT 180000 PSI ROCKWELL C39 TO C42	LSP14-5100	

ENG. 883
5-63

MODEL	NEXT ASSY	MODULE NO.	REQ D PER MODULE
LEM			

PART NO. LDW 280-11141-1 GRUMMAN SCH INFO 31-1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ± 1/16 ±.010 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

GRUMMAN REL INFO
PRIM. NO. 215 MP-A 8-11-6

DRAWN BY	J GRANDY	
CHECKED BY		
LAYOUT BY	J GRANDY	
STRUCT SYSTEMS PROCEDURES	FT-Y	4/26
GRP LDR		4/26/66
VEH DES		8/9
STRUCTURES		5/2
STRUCTURES		5/2
WEIGHTS		5-4
PROJECT	R M Carbee	8-11
RELEASE		8-22-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

BONDING PROCEEDURE
MID SECTION ASCENT STAGE Z+27.00

CONTRACT NO. NAS9-1100 DOCUMENTATION TYPE II

CODE IDENT NO. 26512 SIZE F 28 X 40 LDW 280-11141 A

SCALE LINE ITEM I SHEET

4 3 2 1

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11141 | EO NO. B1
CONTROL INFO NO. LEM-3-3776

IN MODEL BLOCK FOR-1

REMOVE LDW280-23018 & LDW280-53018 & ADD TEST SPECIMEN FOR LTA-3/13) & LEM-3/33). QUANTITY REQD 5 (WAS) 1 FOR LTA-3/13) & LEM-3/33).

3

DETAIL SPEC REQ ☐	CL II ENGRG CHG ☐	CL I ENGRG CHG ☐	

REASON FOR EO: 5 SPECIMENS/VEHICLE REQD.

DESCRIPTION OF EO: FOR-1 NOTED ABOVE.

GAEC EO RELEASE: C

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA-3/13)	
		LEM-3/33)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG ✓	RECORD EO	REWORK ✓	SCRAP

APPROVED BY		sar		—	BM				
DATE	9/2	10-3		—	8-25-66	8-25-66	8-30-66	8-25-66
	8/25/66 VDI	~~SUPPORT~~ WTS	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO	EO NO.
C3	BONDING PROCEDURE A/S ~ MID SECTION +Z27.00	LDW280-11141	B1

ISSUED BY LIAISON ~ J. KOSLOSKI X2151 SECTION V.D.1 GROUP NO. 335 PL 35

01

NAS 9-1100

LDW280-11143 C

LFM

LFM-126	LDW280-28882	LTA-8(18)	1 EA
PART NO. LDW280-11143-26-1, -27-1 & -29-1			
LFM-126	LDW280-28178	LTA-8(18)	1
PART NO. LDW280-11143-31-1,			
LM	LDW280-28882	LTA-8(18)	1EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-11143-27 & -29		GAEC SCH NO. 30	

LM	LDW280-28882	LTA-8(18)	1EA
LM	LDW280-28178	LTA-8(18)	1EA
PART NO. LDW280-11143-26 & -31			
LM	LDW280-28178	LTA-8(18)	1EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-11143-17 & -25		GAEC SCH NO. 30	

LM	LDW280-28178	LM-2(32)	1 EA
LM	LDW280-28178	LM-1(31)	1 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-11143-11, -23 & -24		GAEC SCH NO. 30	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	C	C	C	C					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO C	
LAST DASH NO. USED	-31-1	PRIM NO. 215	JM/001 MP ECC5-27

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	.
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100 LINE ITEM #1 DOCUMENTATION TYPE II

DRAWN BY	H. DEUTSCH 4-30-66	RELIABILITY	~
LAYOUT BY	S. SIDMAN 5-18-66		
CHECKED BY	5-10-66		
GR. LEADER	C. Pusateri 5/19/66		
VEH DES INT	5/23		
STRUCTURE	5/26	PROJ ENGR	Plunkett 8 Jun
STRUCTURE	Hilderman 5/27	REL GROUP	Bott 6-11-66
WEIGHTS			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SKIN
ASCENT STAGE - CABIN
THERMAL SHIELD

SIZE	CODE IDENT NO.		
B	26512	LDW280-11143	C
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 12-65

REV C CDR 5/15/68

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
A	1	1.00,2.00 3.00&1.10					✓	EO-A1	ADDED SH 1.10; SH 1 OF 4 WAS 1 OF 3 ADDED -17, -19, -20 & -21 REMOVED -11, -13, -14 & -15 FROM LTA-8	LTA-8(19)		✓	V. SIBILLA 7.29.66		
	2	1.00 2.00 3.00&1.10					✓	EO-A2	REMOVED LDW280-11143-13 & -14, -19 & 20 ADDED LDW280-11143-23, -24, -25 & 26	LTA-8 (18) LEM-1(31) LEM-2(32)		RL			
B	1	1.00,1.10,2,3						EOB1	CREATED -27 & -29	LTA-8(18)	NOT	REQD	R.E.KINGSBURY 2-23-67		
	2.	1.00,1.10,2,3						EOB2	ADDED -31 & -33 REMOVED -15 & -21	LTA-8, LM-1 & -2		-15 & -21			
	3	1.00,1.10						EOB3	TO -26 MOD/BLOCK ADDED N/A LDW280-28882	LTA-8(18)	NOT	REQD			
	4	1.00,1.10						EOB4	REF EO B2: FOR -31 IN M/B ADDED N/A LDW280-28882		✓				
	5	1.00,1.10						LEO280-427	ADDED LM-3 THRU LM-15 REQUIREMENTS FOR -15	LM-3 THRU LM-15	NOT	REQD			
	6	1.00,1.10						LEO280-435	ON INCORP OF EOB5 -33 WAS -15 REF LEO280-427						
	7	1.10,3.00						EOB7	TRIMMED -33	LM-1, LM-2	✓				
	8	1.00,1.10						EOB8 ①	REF EO B7: ADDED LM-3 THRU LM-15 TO EFFECTIVITY	LM-3 THRU LM-15	NOT	REQD			
C	1	1.00 1.10 2.00			✓			LEO280-502	ADDED NOTE 6	LTA-8, LM-1 THRU LM-15	✓		HERB. SCHWETER 4-25-68		
	2	1.10 1.00 2.00 3.00	8A			✓		EO C2 LCD 1069 CCA-553	REMOVED -33	LM-1 THRU LM-15		-33			
	3	1.10 3.00	5,7B 8C			✓		EO C3 LCD 2287	-26, -27 & -29 ADDED NOTE 7	LTA-8	✓				
	4	1.10 3.00	8A			✓		EO C4 LCD 2287 CCA745	ON -31 ADDED NOTE 8						
	5	1.10 3.00	9B			✓		EO C5 LCD 20216	ENLARGED SLOT IN -31						
	6	1.00 1.10 2.00 3.00	5B 6,8C 7,8A	LFM-126		✓		LCD 1021-33 CCA-498 ④	ADDED -26-1, -27-1, -29-1 & -31-1		NOT	REQD			

CHG APPROVED

LTR	GROUP LDR	VEH.DES.INT.	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY	THERMO
A							
B							
C	7.R 5/14	[illegible] 5/16/68	[illegible] 5/20/68	FEB			5-20-68

ENG 77.16 3-66

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11143	C
SCALE NONE			SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		GT835P-8	E	TAPE	SEE NOTE 8						
		LDW280-11143-31-1		DOOR	MAKE FROM	LDW280-1131	0-13-4		NONE	NONE	8A
		-29-1		BUBBLE	MAKE FROM LDW280-11310-13-4					NONE	8C
		-27-1		SKIN	MAKE FROM LDW280-11310-13-4					NONE	5B
		-26-1		BUBBLE	MAKE FROM LDW280-11310-13-4					NONE	8C
		-29		BUBBLE	MAKE FROM	LDW280-	11310-11			SEE NOTE 7	7C
		-27		SKIN	MAKE FROM	LDW280-	11310-11			SEE NOTE 7	5B
		26		BUBBLE	MAKE FROM LDW280-11310-11					SEE NOTE 7	7C
		-25		BUBBLE						NONE	
		-31		DOOR						SEE NOTE 8	8A
		-17		SKIN	MAKE FROM LDW280-11310-11				NONE	NONE	
		-24		BUBBLE	AL ALLOY SH	QQ-A-250/5	2024-T3	.020X12 7/8X22 7/8	SEE NOTE 5	SEE NOTE 5	
		-23		BUBBLE				.020X12 7/8X22 7/8	SEE NOTE 5	SEE NOTE 5	
		LDW280-11143-11	E	SKIN	AL ALLOY SH	QQ-A-250/5	2024-T3	.020X16 3/8X35 5/8	SEE NOTE 5	SEE NOTE 5	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						CM	CHEM-MILLING	LSP 14-26100
						76	ALODINE	LSP 14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

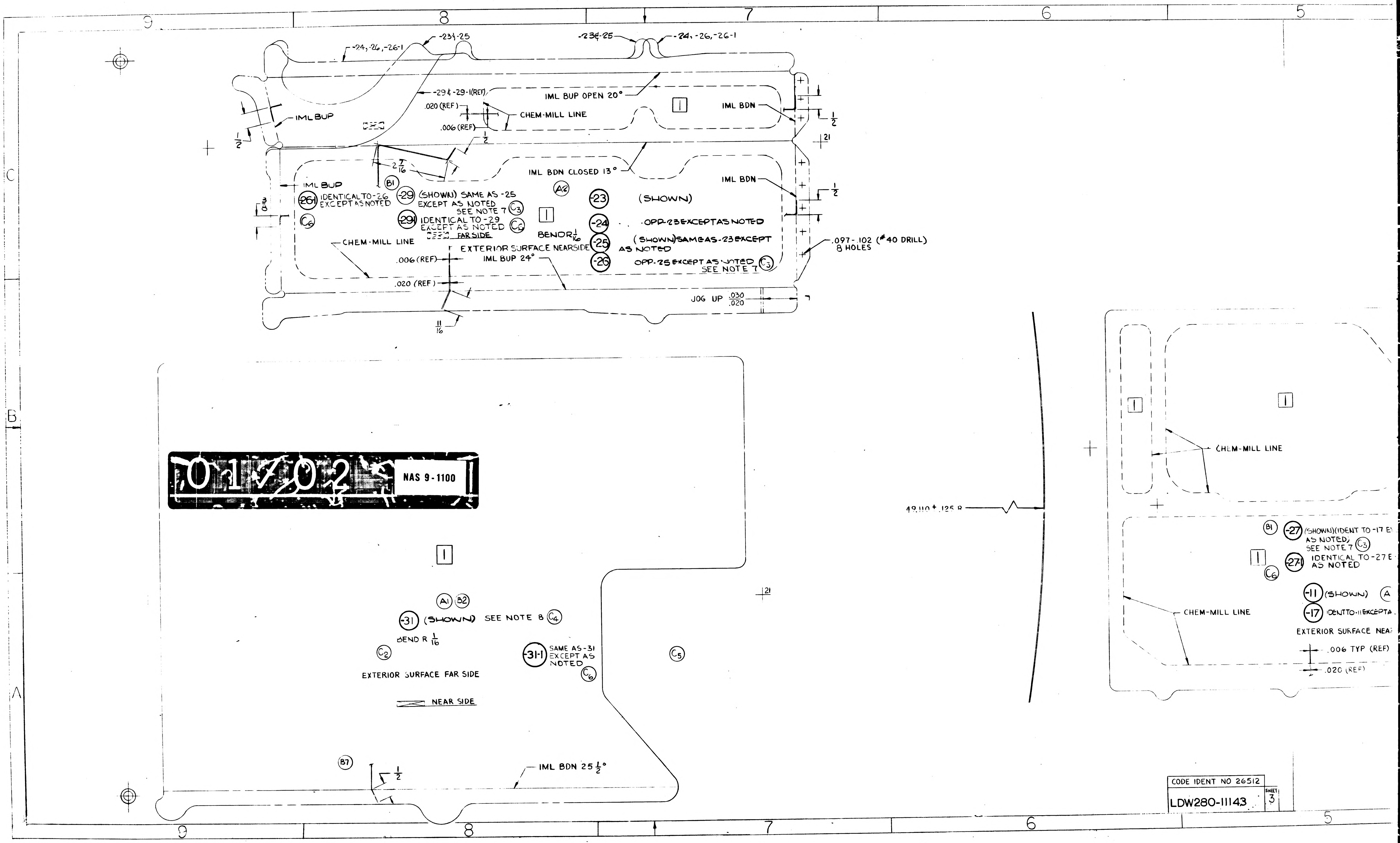
SIZE B
CODE IDENT NO. 26512
LDW280-11143
C

SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

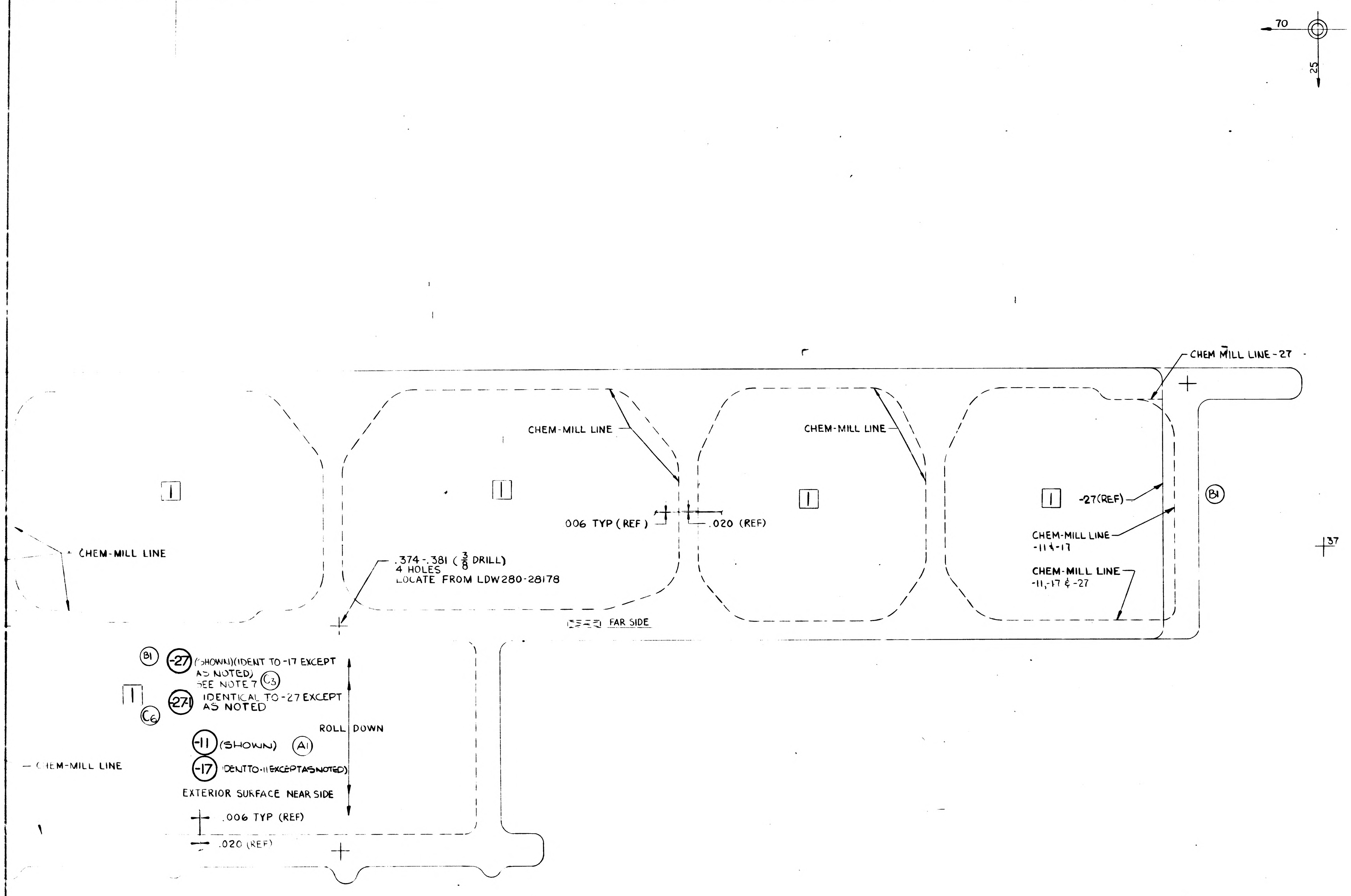

9
8
7
6
5
C
B
A
-24, -26, -26-1
-23 & -25
-23 & -25
-24, -26, -26-1
-29 & -29-1 (REF)
IML BUP OPEN 20°
IML BUP
.020 (REF)
CHEM-MILL LINE
.006 (REF)
1/2
IML BDN
1/2
21
IML BDN CLOSED 13°
2 7/16
1/2
IML BUP
B1
A2
IML BDN
1/2
3/8
-26-1 IDENTICAL TO -26 EXCEPT AS NOTED
C6
-29 (SHOWN) SAME AS -25 EXCEPT AS NOTED SEE NOTE 7 C3
-29-1 IDENTICAL TO -29 EXCEPT AS NOTED C6
FAR SIDE
-23 (SHOWN)
-24 OPP -23 EXCEPT AS NOTED
-25 (SHOWN) SAME AS -23 EXCEPT AS NOTED
-26 OPP -25 EXCEPT AS NOTED SEE NOTE 7 C3
BEND R 1/16
CHEM-MILL LINE
EXTERIOR SURFACE NEARSIDE
.006 (REF)
IML BUP 24°
.020 (REF)
.097-.102 (#40 DRILL) 8 HOLES
JOG UP .030/.020
11/16
49.110 ± .125 R
CHEM-MILL LINE
B1
-27 (SHOWN) (IDENT TO -17 E AS NOTED, SEE NOTE 7 C3
-27-1 IDENTICAL TO -27 E AS NOTED
C6
-11 (SHOWN)
A
-17 IDENT TO -11 EXCEPT A
EXTERIOR SURFACE NEA
CHEM-MILL LINE
.006 TYP (REF)
.020 (REF)
A1 B2
-31 (SHOWN) SEE NOTE 8 C4
BEND R 1/16
C2
-31-1 SAME AS -31 EXCEPT AS NOTED C6
C5
EXTERIOR SURFACE FAR SIDE
NEAR SIDE
B7
1/2
IML BDN 25 1/2°
21

01702 NAS 9-1100

CODE IDENT NO 26512

LDW280-11143 SHEET 3

2/2


70
25
CHEM-MILL LINE
CHEM-MILL LINE
CHEM-MILL LINE -27
CHEM-MILL LINE
-27(REF)
CHEM-MILL LINE -11 & -17
CHEM-MILL LINE -11, -17 & -27
B1
.006 TYP (REF)
.020 (REF)
.374-.381 (3/8 DRILL) 4 HOLES LOCATE FROM LDW280-28178
FAR SIDE
37
B1
-27 (SHOWN)(IDENT TO -17 EXCEPT AS NOTED) SEE NOTE 7
C3
-27-1 IDENTICAL TO -27 EXCEPT AS NOTED
C6
ROLL DOWN
-11 (SHOWN)
A1
-17 (IDENT TO -11 EXCEPT AS NOTED)
CHEM-MILL LINE
EXTERIOR SURFACE NEAR SIDE
.006 TYP (REF)
.020 (REF)

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. MAKE LDW280-11143-11,-23,-24,-31 FROM 2024-T3 ALCLAD. BOTH SIDES (SKIN QUALITY). FINISH ALUMALITE 200/R1/EB10 WHICH MAY BE PURCHASED FROM ALUMINUM CO. OF AMERICA (CODE IDENT 01634)
3. THE SURFACE DESIGNATED "EXTERIOR" SHALL BE PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROLL PRODUCTS INC.
4. THE INTERIOR SURFACE OF -31 TO BE CHEM-MILLED IN ACCORDANCE WITH LSP 14-26100 FROM .020 TO .006±.002 TOTAL THICKNESS. FINISH #76 (LSP 14-9010) ON CHEM-MILLED SURFACE.
5. THE INTERIOR SURFACE OF -11,-23 & -24 TO BE CHEM-MILLED IN ACCORDANCE WITH LSP 14-26100. FINISH ENTIRE SURFACE #76 (LSP 14-9010).
6. MATERIAL, FINISHES, HANDLING AND PERMISSIBLE DEVIATIONS PER LPC-280-16
7. ON -26, -27 & -29 ONLY COVER ALL EXTERIOR SURFACES WITH 401B-2 3M GRAY VELVET PAINT, LSM-14-4405 PER LSP-14-4503.
8. ON -31 ONLY COVER ALL EXTERNAL SURFACES WITH GT835P-8 HFILM TAPE.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 28 X 88

PRINTING INFO ONLY
FULL SIZE SHEET AREA (30 X 99) = 21 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 5.5 SQ. FT.
PRINT TRIM LINE

LDW280-11143-11,23,-24 & -31

CHEM-MILL LINE TOLERANCE
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	.006 ± .002	.014 (REF)
☐		
☐		

02/02

NAS 9-1100

LDW280-11143C

LDW280-11143C

CODE IDENT NO 26512
LDW280-11143 SHEET 3

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LFM LM	H	26512	LDW280-11143	C
	SCALE FULL			SHEET 3.00

FOR PHOTO REPRODUCTION K2

2FR

R 1/1/76

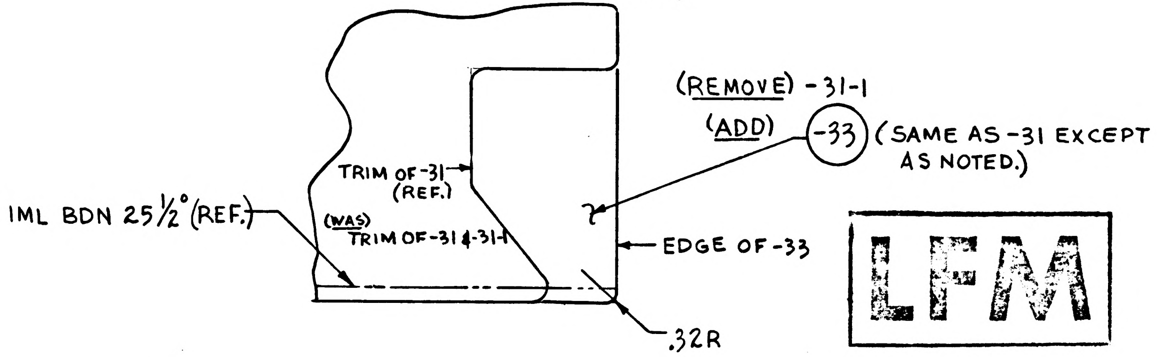
ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11143		EO NO. D1	
CONTROL INFO NO. LDW280B4203			

IN FLD. OF DWG. & B/M, SH3 ZONE 8A

REMOVE -31-1 & REPLACE WITH -33.
(-33 IS THE SAME AS -31-1 EXCEPT FOR TRIM AS SHOWN BELOW.)



TRIM OF -31 (REF.)
IML BDN 25½° (REF.)
(WAS) TRIM OF -31 & -31-1
(REMOVE) -31-1
(ADD) -33 (SAME AS -31 EXCEPT AS NOTED.)
EDGE OF -33
.32R

LFM

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCR 1021-33	PKG. 4 (5)

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
CUT OUT INCORRECT ON -31-1	IN FLD OF DWG. & B/M REMOVED -31-1 & ADDED -33	JK 6/26/8

MODEL	EFFECTIVITY		
	~~PROCURING ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM126	LTA-8 (18)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG	RECORD EO	REWORK	SCRAP
✓			✓

APPROVED BY								
DATE	6/26/68	6/26/68		6/25/68	6/26/68		6/26/68	6-26-68
	V.D.I.	THERMO ~~SUPPORT~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~SUPT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SKIN - A/S - CABIN THERMAL SHIELD	LDW280-11143	D1

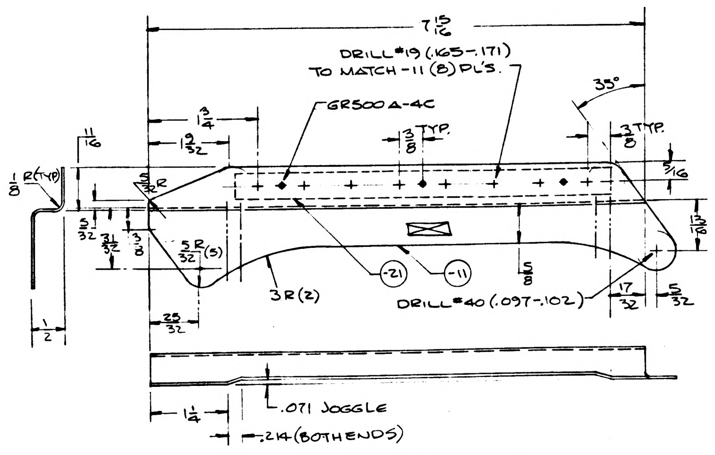
06 26 68
ISSUED BY P. DELIA / D. KLINGENER SECTION V.D.I. / X-7033 GROUP NO. 335 PL 25

01 NAS 9-1100

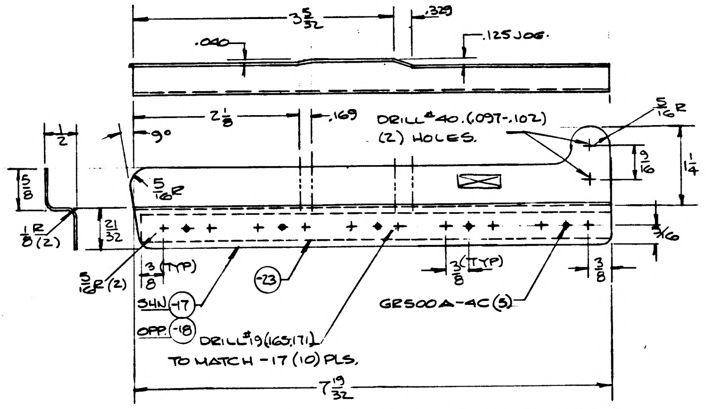
REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY DCRF OR ECP	CLASS II	CLASS I	NO SPEC REQ	ENGRG ORDER	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MODULE NUMBER	DISPOSITION OF EXIST PARTS: RE-WORK	SCRAP	ENGRG APPD	GOVT APPD

MANUFACTURING OPERATIONS

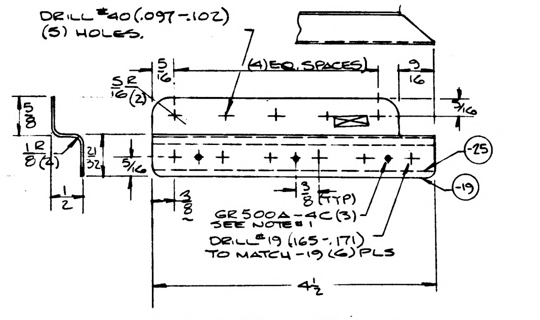
NOTES CHECKED ✓ APPLY TO THIS DWG.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.	
200 √ FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
RUBBER PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL f DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	


7 15/16
DRILL #19 (.165-.171) TO MATCH -11 (8) PL'S.
GR500A-4C
35°
3 TYP.
1 3/4
13/32
3/8 TYP.
11/16
1/8 R (TYP)
1/8 R
3/32
5/32 R (3)
-21
-11
3/16
5/8
1 3/32
3 R (2)
DRILL #40 (.097-.102)
25/32
17/32
5/32
1/2
.071 JOGGLE
1 1/4
.214 (BOTH ENDS)

LDW 280-11147-1 ASSY

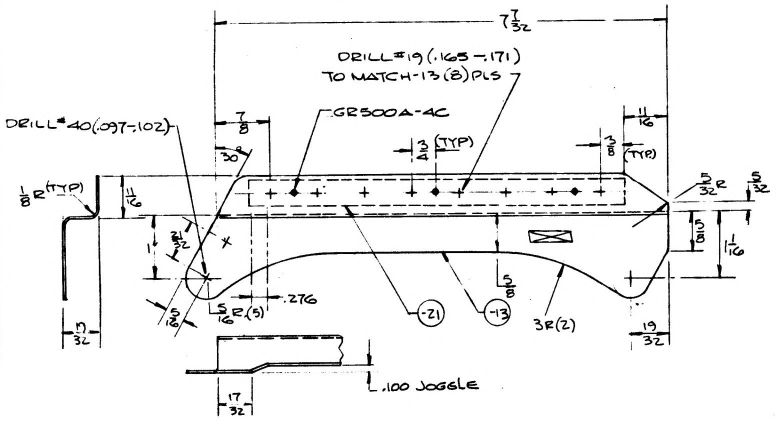

3 5/32
.329
.040
.125 JOG.
2 1/8
.169
DRILL #40 (.097-.102) (2) HOLES.
5/16 R
9°
5/16 R
1 1/4
1/2
1/8 R (2)
3/8 (TYP)
5/16 R (2)
3/8 (TYP)
-23
GR500A-4C (5)
SHN -17
OPP -18
DRILL #19 (.165-.171) TO MATCH -17 (10) PLS.
7 19/32

LDW 280-11147-7 ASSY SHN
-8 ASSY OPP.

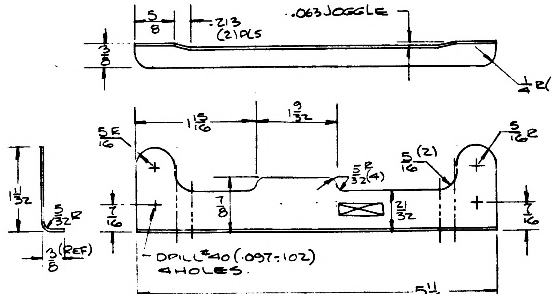

DRILL #40 (.097-.102) (5) HOLES.
5/16 R (2)
(4) EQ. SPACES
5/16
5/16
1/8 R (4)
1/2
3/16
-25
-19
GR500A-4C (3) SEE NOTE 1
3/8 (TYP)
DRILL #19 (.165-.171) TO MATCH -19 (6) PLS
4 1/2

LDW 280-11147-9 ASSY

NOTES: 1-FINAL HOLE SIZE FOR GR500A-4 TO BE PER LSP14-15303


7 7/32
DRILL #19 (.165-.171) TO MATCH -13 (8) PLS
DRILL #40 (.097-.102)
GR500A-4C
3/4 (TYP)
3/8 (TYP)
7/8
30°
1/8 R (TYP)
11/16
5/32 R
5/32
1 1/16
.276
5/32 R (5)
-21
-13
3R (2)
19/32
17/32
.100 JOGGLE

LDW 280-11147-3 ASSY


5/8
.213 (2) PLS
.063 JOGGLE
1/8 R (2)
5/16 R
1 15/16
9/32
5/32 R (2)
5/16 R
5/16 R
1 11/32
1/8 R
3/8 (REF)
DRILL #40 (.097-.102) 4 HOLES.
5 11/16

LDW 280-11147-15 SHN
-16 OPP.

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	G. S. S.	LSP 14-9030

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

ENG. 883
5-63

-9	-8	-7	-3	-1	PART OR IDENTIFYING NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE
3	5	5	3	3	GR500A-4C	E		RIVET	GRUM. STD.							
1					LDW280-11147-25	E		NUT CHANNEL	NAS688-P6-6			LG = 4 1/2				
	1	1			-23			NUT CHANNEL	NAS688-P6-10			LG = 7 1/2				
			1	1	-21			NUT CHANNEL	NAS688-P6-8			LG = 6				
1					-19			BRKT	AL. ALLOY	QQ-A-355	2024-T3	.040 × 2 3/4 × 8	NONE	88		
	1				-18			BRKT	AL. ALLOY	QQ-A-355		.040 × 2 3/4 × 8				
		1			-17			BRKT	AL. ALLOY	QQ-A-355		.040 × 2 1/4 × 8				
			1		-13			BRKT	AL. ALLOY	QQ-A-355		.040 × 2 3/4 × 9				
				1	-11			BRKT	AL. ALLOY	QQ-A-355	2024-T3	.040 × 2 3/4 × 9	NONE	88		
					-9			BRKT ASSY	SEE DETAILS							
					-8			BRKT ASSY	SEE DETAILS							
					-7			BRKT ASSY	SEE DETAILS							
					-16			BRKT	AL ALLOY	QQ-A-355	2024-T3	.050 × 2 1/4 × 6	NONE	88		
					-15			BRKT	AL. ALLOY	QQ-A-355	2024-T3	.050 × 2 1/4 × 6	NONE	88		
					-3			BRKT ASSY	SEE DETAILS							
					LDW280-11147-1	E		BRKT ASSY	SEE DETAILS							

QTY REQ'D PER ASSY

TO BE REDRAWN IN PRODUCTION FORMAT

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
LEM	LDW 280-28305	LEM-2 (32)	1 EA
LEM	LDW 280-28305	LEM-1 (31)	1 EA
LEM	LDW 280-28305	LTA-8 (18)	1 EA

PART NO. LDW 280-11147-1,3,15,16,7,8,9 GRUMMAN SCH INFO 31-4

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
± 1/32 ± .020 ± 2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE
GRUMMAN REL INFO
PRIM. NO.

DRAWN BY
CHECKED BY
LAYOUT BY
GROUP LEAD
V.D.I.
STRUCT.
STRUCT.
WEIGHTS
RELIABILITY
PROJ. ENGR.
REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

BRACKET ASSEMBLY
4/5 CABIN - F/F EQUIPMENT LINE

CONTRACT NO. NAS-9-1100 DOCUMENTATION TYPE II
CODE IDENT NO. 26512 SIZE F LDW 280-11147
SCALE FULL LINE ITEM 1 SHEET

01 NAS 9-1100

LDW280-11148 B

LM	LDW280-28478	LM-15(45)	1
		THRU	
LM	LDW280-28478	LM-4(34)	1
PART NO LDW280-11148-23			
LM	LDW280-54036	LM-15(45)	1
		THRU	
LM	LDW280-54036	LM-4(34)	1
PART NO. LDW280-11148-25			
LM	LTM280-26626	PA-1(47)	1
LM	LDW280-28478	LM-3(33)	1
LM	LDW280-28478	LM-2(32)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-11148-21		GAEC SCH NO.	

LM	LDW280-28478	LM-15(45)	1
		THRU	
LM	LDW280-28478	LM-4(34)	1
LM	LDW280-28478	LM-1(31)	1
LM	LDW280-28478	LTA-8(18)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-11148-13		GAEC SCH NO.	

LM	LTM280-26626	PA-1(47)	1 EA.
LM	LDW280-28478	LM-15(45)	1 EA
LM	LDW280-28478	LM-14(44)	1 EA
LM	LDW280-28478	LM-13(43)	1 EA
LM	LDW280-28478	LM-12(42)	1 EA
LM	LDW280-28478	LM-11(41)	1 EA
LM	LDW280-28478	LM-10(40)	1 EA
LM	LDW280-28478	LM-9(39)	1 EA
LM	LDW280-28478	LM-8(38)	1 EA
LM	LDW280-28478	LM-7(37)	1 EA
LM	LDW280-28478	LM-6(36)	1 EA
LM	LDW280-28478	LM-5(35)	1 EA
LM	LDW280-28478	LM-4(34)	1 EA
LM	LDW280-28478	LM-3(33)	1 EA
LM	LDW280-28478	LM-2(32)	1 EA
LM	LDW280-28478	LM-1(31)	1 EA
LM	LDW280-28478	LTA-8(18)	1 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-11148-11;12, -15;17;18 & 19		GAEC SCH NO. 31	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -25

GRUMMAN REL INFO B

PRIM NO. 215 | UK(001) | ME-18 2/6/9 | EMF

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.010 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	HARRIGAN 4/27/66
LAYOUT BY	HARRIGAN 4/27/66
CHECKED BY	
GR LEADER	TRAUT 4/27/66
VEH DES INT	BISCHOFF 4/27
STRUCTURES	HILDERMAN 4/27
STRUCTURES	
WEIGHTS	ROBESCH 4/29
PROJ ENGR	ALBER 5/2/66
REL GROUP	CARAMANICA 5/3/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT
ASCENT STAGE-MID SECT-INTERSTAGE
TRUSS-ENG DRAIN LINES

SIZE B | CODE IDENT NO. 26512 | LDW280-11148 | B
SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-11148 NO CHG 4-27-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
									RETRACED NO CHG LAST REV NO CHG. SUPPA 10-14-66 ADDED SH 1.10, 2 & 3. LOFTED DWG WAS DIMENSIONED DWG						
A	1							EO-A1	THIS EO IS SUPERSEDED BY EO-A2				SAL SUPPA 10-14-66		
	2							EO-A2	NOT APPLICABLE						
	3							EO-A3	ADDED LM-3,-4,5,-6,-7,-8,-9,-10,-11,-12,-13,-14 & -15 EFF TO -11,-12,-13,-15,-17,-18 & -19	LM-3(33) THRU LM-15(45)	NOT REQD				
	4							EO-A4	ON-13 INCREASED HOLE DIA 1/2 TO 11/16 (4 PLACES)	LTA-8(18) LM-1(31 THRU LM-15(45)	✓				
	5								Ⓡ ON-15 ADDED DIMENSION 2 1/8 & 5/16				RR.		
B	1	1.00 3.00							INC. EO. B1	LM-2(32) LM-3(33)			H. STEVES 9-5-68		
	2	1.00							INC. E.O. B2	PA-1(47)					
	3	1.00, 2.00 3.00							INC. EO. B3	LM-4(34) THRU LM-15(45)					
	4	3.00							INC. EO. B4	LM-4(34) THRU LM-15(45)					
	5	3.00		Ⓡ					INC. EO. B5	LM-4(34) THRU LM-15(45)		H.D.	E.C.G.		

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS						
A	—	Phillip 11/66									
B											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11148	B
SCALE NONE		SHEET 1.10	Ⓑ

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11148-25	E	CLIP	AL ALLOY SH	QQ-A-250/4	2024	.032x2x2	T3/T42	88	
		-23		CLIP			2024	.032x2x2	T3/T42		
		-21		CLIP			2024-T3	.040x8 1/8x13	NONE		
		-19		CLIP			2024	.032x2 1/2x2 7/8	T3/T42		
		-18		CLIP			2024	.032x2 3/8x3 1/2	T3/T42		
		-17		CLIP			2024	.032x2 3/8x3 1/2	T3/T42		
		-15		BRACKET			2024-T3	.032x3 1/8x3 3/4	NONE		
		-13		SUPPORT				.040x8 1/8x13			
		-12		BRACKET				.032x3 7/8x5 1/4			
		LDW280-11148-11	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.032x3 7/8x5 1/4	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T42	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11148	B

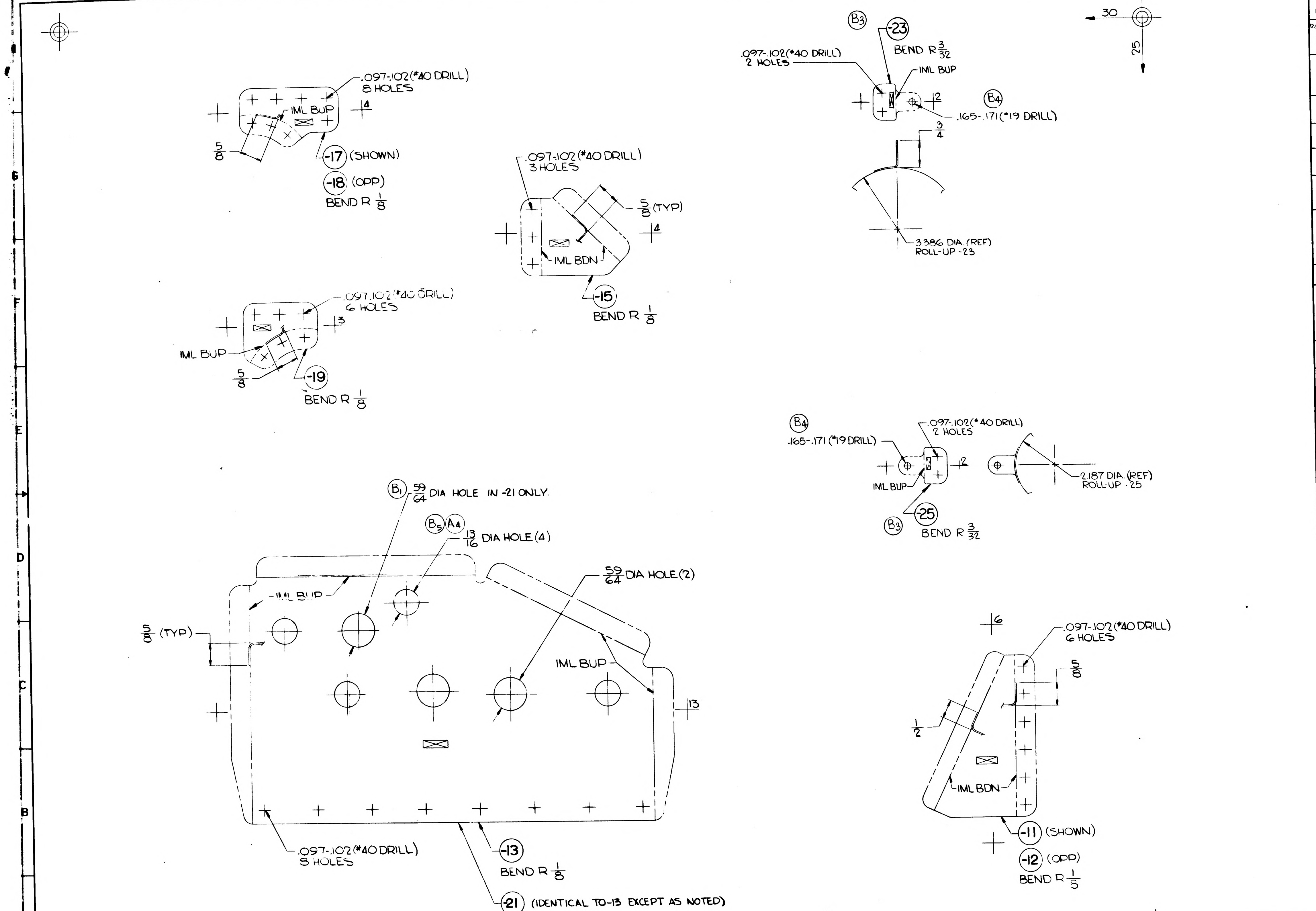
SCALE NONE

SHEET 2 OO

ENG 77.2 7-65

01

NAS 9-1100


.097-.102 (#40 DRILL)
8 HOLES
IML BUP
4
5/8
-17 (SHOWN)
-18 (OPP)
BEND R 1/8
.097-.102 (#40 DRILL)
3 HOLES
5/8 (TYP)
4
IML BDN
-15
BEND R 1/8
.097-.102 (#40 DRILL)
6 HOLES
3
IML BUP
5/8
-19
BEND R 1/8
B3
-23
BEND R 3/32
.097-.102 (#40 DRILL)
2 HOLES
IML BUP
2
B4
.165-.171 (#19 DRILL)
3/4
3.386 DIA (REF)
ROLL-UP -23
30
25
B4
.165-.171 (#19 DRILL)
.097-.102 (#40 DRILL)
2 HOLES
2
IML BUP
B3
-25
BEND R 3/32
2.187 DIA (REF)
ROLL-UP -25
B1
59/64 DIA HOLE IN -21 ONLY.
B5 A4
13/16 DIA HOLE (4)
59/64 DIA HOLE (2)
IML BUP
5/8 (TYP)
IML BUP
13
.097-.102 (#40 DRILL)
8 HOLES
-13
BEND R 1/8
-21 (IDENTICAL TO -13 EXCEPT AS NOTED)
6
.097-.102 (#40 DRILL)
6 HOLES
5/8
1/2
IML BDN
-11 (SHOWN)
-12 (OPP)
BEND R 1/8

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		R
LM	F	26512	LDW280-11148	B

SCALE FULL
SHEET 3.00
K2

FOR PHOTO REPRODUCTION

01 NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28478	LM-15(45)	2 EA
LM		LM-14(44)	2EA
LM		LM-13(43)	2 EA
LM		LM-12(42)	2EA
LM		LM-11(41)	2EA
LM		LM-10(40)	2EA
LM		LM-9(39)	2EA
LM		LM-8(38)	2EA
LM		LM-7(37)	2EA
LM		LM-6(36)	2EA
LM		LM-5(35)	2EA
LM		LM-4(34)	2EA
LM		LM-3(33)	2EA
LM		LM-2(32)	2EA
LM		LM-1(31)	2EA
LM	LDW280-28478	LTA-8(18)	2EA

PART NO. LDW280-11150-13 & -15 GAEC SCH NO. 31-2

LDW280-11150 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23029	LM-15(45)	1
LM		LM-14(44)	1
LM		LM-13(43)	1
LM		LM-12(42)	1
LM		LM-11(41)	1
LM		LM-10(40)	1
LM		LM-9(39)	1
LM		LM-8(38)	1
LM		LM-7(37)	1
LM		LM-6(36)	1
LM		LM-5(35)	1
LM		LM-4(34)	1
LM		LM-3(33)	1
LM	LDW280-23029	LTA-3(13)	1

PART NO. LDW280-11150-19 GAEC SCH NO. 32-4

LM	LDW280-28029	LM-2(32)	1
LM	LDW280-28029	LM-1(31)	1
LM	LDW280-28029	LTA-8(18)	1

PART NO. LDW280-11150-17 (32-5)

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28478	LM-15(45)	1
LM		LM-14(44)	1
LM		LM-13(43)	1
LM		LM-12(42)	1
LM		LM-11(41)	1
LM		LM-10(40)	1
LM		LM-9(39)	1
LM		LM-8(38)	1
LM		LM-7(37)	1
LM		LM-6(36)	1
LM		LM-5(35)	1
LM		LM-4(34)	1
LM		LM-3(33)	1
LM		LM-2(32)	1
LM		LM-1(31)	1
LM	LDW230-28478	LTA-8(18)	1

PART NO. LDW280-11150-11 GAEC SCH NO. 31-2

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -19

GRUMMAN REL INFO A

PRIM NO. 215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.010 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY	HARRIGAN 4/27/66
LAYOUT BY	HARRIGAN 4/27/66
CHECKED BY	
GR LEADER	TRAICT 4/27/66
VEH DESINT	BISCHOFF 4/27/66
STRUCTURES	HILDERMAN 4/27/66
STRUCTURES	
WEIGHTS	ROBESCH 4/29/66
PROJ ENGR	ALBER 5/2/66
REL GROUP	CARAMANICA 5/3/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE - MID SECT INTERSTAGE
TRUSS ENG DRAIN LINES

SIZE B | CODE IDENT NO. 26512 | LDW280-11150 A

SCALE NONE | SHEET 1.00 OF 4

IG 77.1 12-65

THIS DWG SUPERSEDES LDW280-11150 NO CHG 5-3-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED NO CHG LAST REV NO CHG. SUPPA 10-18-66 ADDED SH 1.10, 2 & 3. LOFTED DWG WAS DIMENSION DWG						
A	1	3						EO-A1	ON-13, $1\frac{43}{64}$ WAS $1\frac{41}{64}$.	LTA-8(18), LM-1(31) & LM-2(32)	✓		SAL SUPPA 10-18-66		
	2	1,1.10,2 & 3						EO-A2	ADDED LDW280-11150-17 & NEXT ASSY.						
	3	1 & 1.10						EO-A3	ADDED LM-3,-4;5;6;7;8;9;-10;-11;12;-13;-14 & -15 EFF TO -11,-13 & -15.	LM-3(33) THRU LM-15(45)	NOT REQD				
	4	1, 1.10 2 & 3						EO-A4	ADDED LDW280-11150-19 BRACKET	LTA-3(13) LM-3(33) THRU LM-15(45)	✓				

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS					
A										

ENG 77.16 3-66

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11150	A
SCALE NONE		SHEET 1.10	

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11150-19	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024	.050x 3 x 4	T42	88	
		↕ -17	↕	BRACKET	↕	↕	2024	.050x 3 x 4	T42	↕	
		↕ -15		CLIP	↕	↕	2024	.032x 2 x 3	T3/T42	↕	
		↕ -13	↕	SUPPORT	↕	↕	2024-T3	.032x 4 x 5	NONE	↕	
		LDW280-11150-11	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.032x 5 x 6	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T42	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11150	A

SCALE NONE SHEET 2 OO

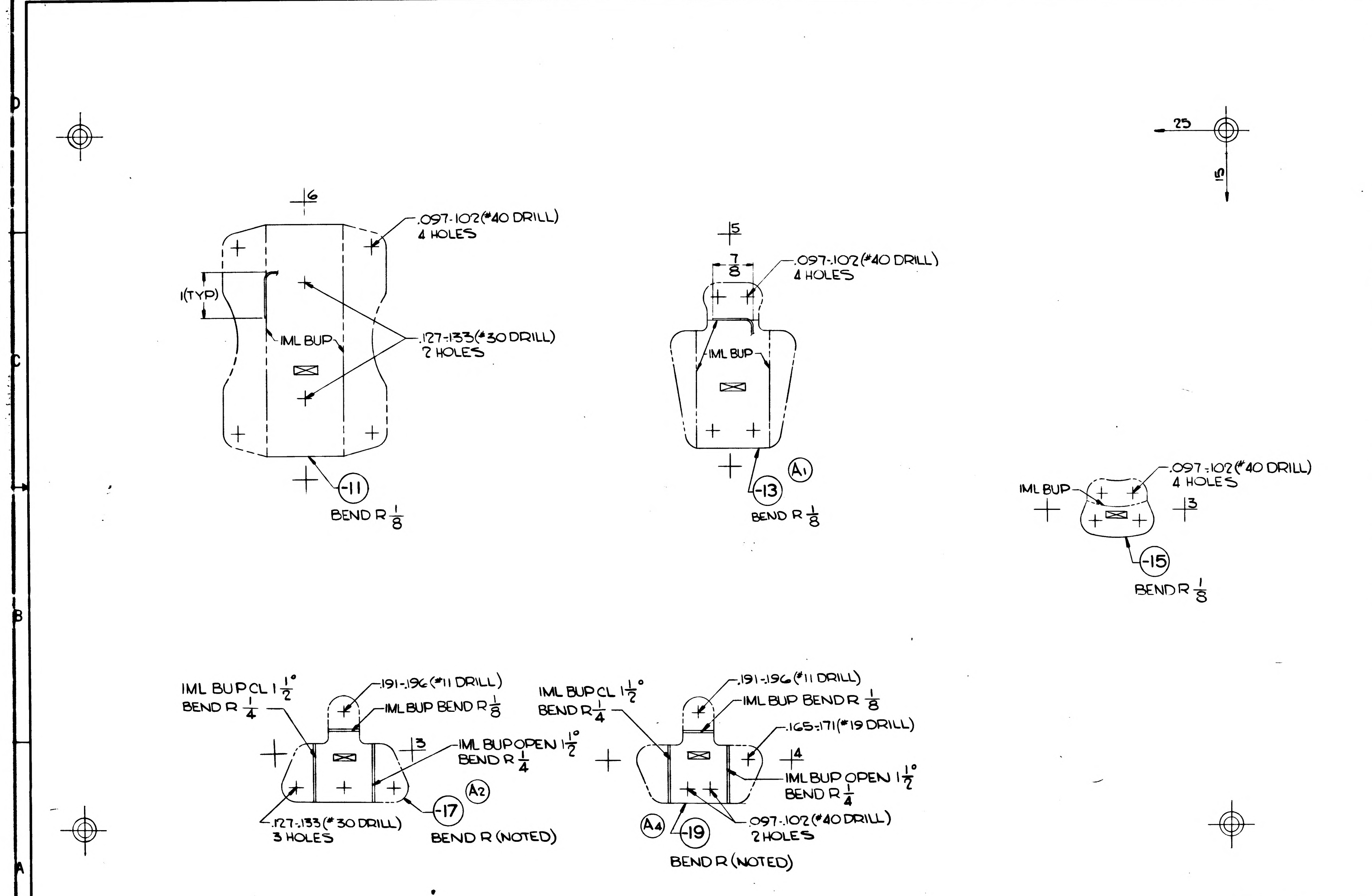
ENG 77.2 7-65

01

NAS 9-1100

LDW280-11150 A

TR OK
WM



6
.097-.102(#40 DRILL)
4 HOLES
1(TYP)
IML BUP
.127-.133(#30 DRILL)
2 HOLES
-11
BEND R 1/8
5
7/8
.097-.102(#40 DRILL)
4 HOLES
IML BUP
A1
-13
BEND R 1/8
25
15
IML BUP
.097-.102(#40 DRILL)
4 HOLES
3
-15
BEND R 1/8
IML BUP CL 1 1/2°
BEND R 1/4
.191-.196(#11 DRILL)
IML BUP BEND R 1/8
3
IML BUP OPEN 1 1/2°
BEND R 1/4
A2
.127-.133(#30 DRILL)
3 HOLES
-17
BEND R (NOTED)
IML BUP CL 1 1/2°
BEND R 1/4
.191-.196(#11 DRILL)
IML BUP BEND R 1/8
.165-.171(#19 DRILL)
4
IML BUP OPEN 1 1/2°
BEND R 1/4
A4
-19
.097-.102(#40 DRILL)
2 HOLES
BEND R (NOTED)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
D	26512	LDW280-11150	A

MODEL OR END ITEM | SCALE FULL | SHEET 3 OO

2 FOR PHOTO REPRODUCTION 1

K2

LDW280-11150A

01 NAS 9-1100

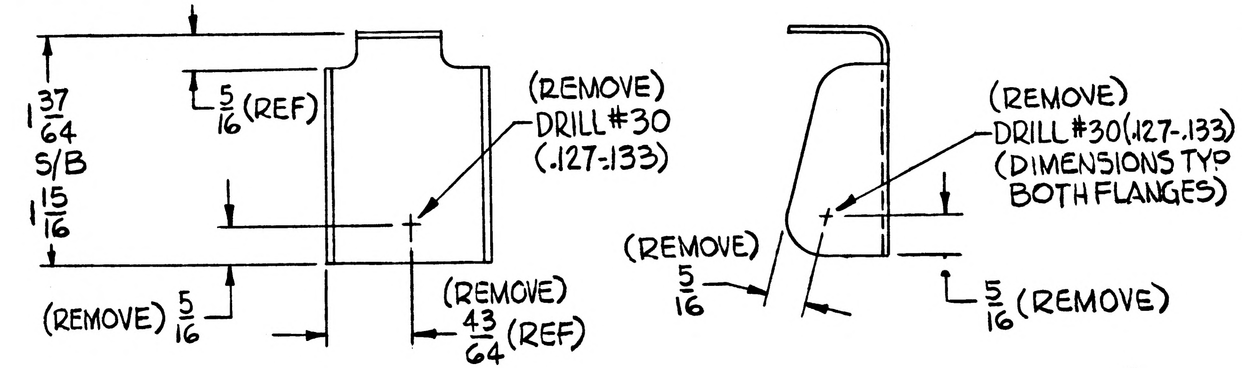
ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512 *
ENGINEERING ORDER

DWG NO. LDW280-11150 EO NO. B1
CONTROL INFO NO. LM-5-11250

IN MOD BLK: REMOVE LM-1 & LM-2 FROM -17,
ADD -21 FOR LM-1 & LM-2, N/A LDW280-28029, 1 REQD/MODULE.
I & T=E

IN FLD OF DWG ADD -21,
-21 SAME AS -17 EXCEPT AS SHOWN:



1 37/64 S/B 1 15/16
5/16 (REF)
(REMOVE) DRILL #30 (.127-.133)
(REMOVE) 5/16
(REMOVE) 43/64 (REF)
(REMOVE) DRILL #30 (.127-.133) (DIMENSIONS TYP BOTH FLANGES)
(REMOVE) 5/16
5/16 (REMOVE)

5

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: TO AVOID SHIMMING ON CLAMP INSTL

DESCRIPTION OF EO: REMOVED LM-1 & LM-2 FROM -17 MOD. BLK. ADDED -21

B GAEC EO RELEASE

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-1 (31)	
		LM-2 (32)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY	WT			—		DV	RMC	
✓			-17	DATE	12/1/66			—	12/1/66	12/1	12-5-66	12/1/66
REVISE DWG	RECORD EO	REWORK	SCRAP	1	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	BRACKET ASCENT-MIDSECT-EQUIP. LINES	LDW280-11150	B1

ISSUED BY LIAISON F. STEINMETZ/CCA X6454 SECTION VDI GROUP NO. 335 PL 5

01

NAS 9-1100

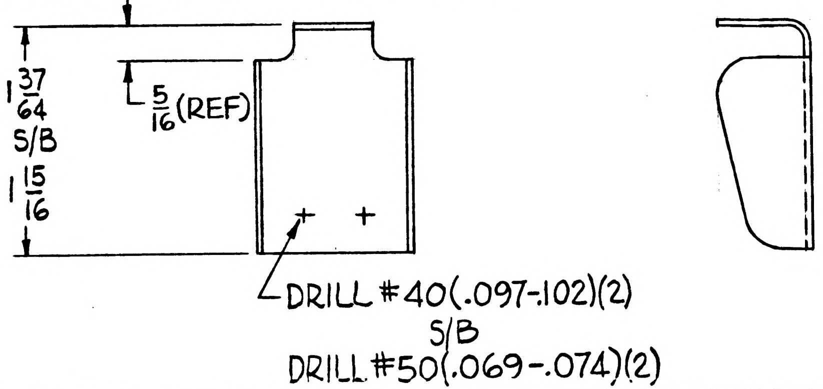
ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO.	LDW280-11150	EO NO.	B2
CONTROL INFO NO.	LM-5-11252		

IN MOD BLK: REMOVE LM-3 THRU LM-15 FROM -19
ADD -23 FOR LM-3 THRU LM-15, N/A LDW280-23029, 1 REQD/MODULE
1 & T=E

IN FLD OF DWG ADD -23
-23 SAME AS -19 EXCEPT AS SHOWN:



DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: TO AVOID SHIMMING ON CLAMP INSTL

DESCRIPTION OF EO: DELETED -19 FROM LM-3 THRU -15
ADDED -23

GAEC EO RELEASE: ER

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3 (33) THRU	
		LM-15 (45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓			-19
REVISE DWG	RECORD EO	REWORK	SCRAP

APPROVED BY	WT			~	KC	CH		
DATE	12/2/66			~	12/2/66	12-3-66	12-7-66	12/3/66
1	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	BRACKET ASCENT-MIDSECT-EQUIP LINES	LDW280-11150	B2

ISSUED BY LIAISON F. STEINMETZ/CCA X6454 SECTION VDI GROUP NO. 335 PL 5

01 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER EMF-A

DWG. NO. LDW280-11150
EO NO. B3
CONTROL INFO NO. LM-5-12103

THIS IS A REVISION TO EO B2

CREATE -25 SAME AS -23 EXCEPT:

1 15/16 S/B 1 25/32

IN MOD. BLK: REMOVE LM-3 THRU LM-15 FROM -23
ADD: -25 FOR LM-3 THRU LM-15 N/A LDW280-23029
1 REQD/MODULE, I&T-E

RELEASED BY LIAISON

(REF. EO LM-5-12114)

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☐

REASON FOR EO: BRACKET TOO LONG

DESCRIPTION OF EO: REF EO B2
IN FLD B/M & M/B
DELETED -23 FROM LM-3 THRU -15
ADDED -25 FOR LM-3 THRU -15 1 REQD
N/A LDW280-23029

GAEC EO RELEASE C

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3 (33)	
		THRU	
		LM-15 (45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG	RECORD EO	REWORK	SCRAP
✓			✓

APPROVED BY	VJ			—	JFA	CH	RMC	
DATE	4/1/67			—	4-7-67	1-5-67	1-13-67	1/17/67
1	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CUST~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	BRACKET ASCENT - MID SECT. - EQUIP. LINES	LDW280-11150	B3

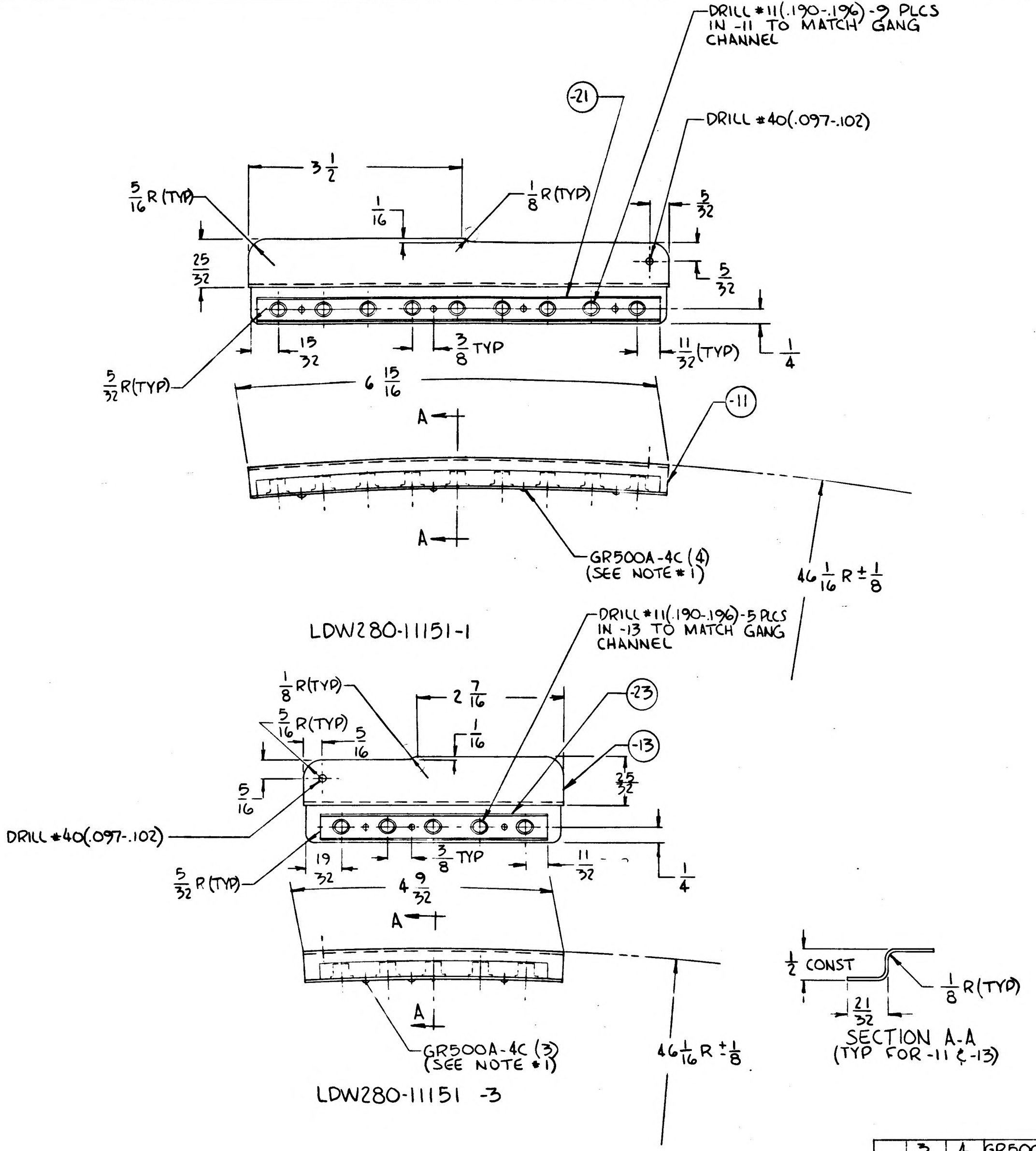
ISSUED BY LIAISON, P HUSTED 6452 SECTION VDI GROUP NO. 335 PL 35

01

NAS 9-1100

MANUFACTURING OPERATIONS	
NOTES CHECKED ✓ APPLY TO THIS DWG.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.	
250 FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
RUBBER STAMP PART NUMBER ~~AND ALL OTHER MARKINGS IN REGION MARKED~~ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ƒ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓

REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY / DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MODULE NUMBER	DISPOSITION OF EXIST PARTS: RE-WORK	SCRAP	ENGRG APPD	GOVT APPD


DRILL #11(.190-.196)-9 PLCS
IN -11 TO MATCH GANG
CHANNEL
-21
DRILL #40(.097-.102)
3 1/2
5/16 R(TYP)
1/16
1/8 R(TYP)
5/32
25/32
5/32
15/32
3/8 TYP
11/32 (TYP)
1/4
5/32 R(TYP)
6 15/16
-11
A
A
GR500A-4C (4)
(SEE NOTE #1)
46 1/16 R ± 1/8
LDW280-11151-1
DRILL #11(.190-.196)-5 PLCS
IN -13 TO MATCH GANG
CHANNEL
1/8 R(TYP)
2 7/16
-23
5/16 R(TYP)
5/16
1/16
-13
25/32
5/16
DRILL #40(.097-.102)
19/32
3/8 TYP
11/32
1/4
5/32 R(TYP)
4 9/32
A
A
GR500A-4C (3)
(SEE NOTE #1)
46 1/16 R ± 1/8
LDW280-11151 -3
1/2 CONST
1/8 R(TYP)
21/32
SECTION A-A
(TYP FOR -11 & -13)

NOTES
1. INSTALL GR500A-4C IN ACCORDANCE WITH LSP 14-15303

PARTS TO BE REDRAWN ON PRODUCTION FORMAT

QTY REQ'D PER ASSY -3	-1	PART OR IDENTIFYING NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE
3	4	GR500A-4C	E		RIVET	GRUMMAN STD							
1		-23			GANG CHANNEL	NAS688P-6-5			LEN = 3 3/4				
	1	-21			GANG CHANNEL	NAS688P-6-9			LEN = 6 3/4				
1		-13			BRACKET	AL. ALLOY	QQ-A-355	2024-T3	.040 x 2 1/4 x 5	NONE	88		
	1	-11			BRACKET	AL. ALLOY	QQ-A-355	2024-T3	.040 x 2 1/4 x 8 1/2	NONE	88		
		-3			BRACKET ASSY								
		-1	E		BRACKET ASSY								

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	G. S. S.	LSP14-9030

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

ENG. 683
8-63

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
LEM	LDW280-28051	LEM-2(32)	1 EA.
LEM	LDW280-28051	LEM-1(31)	1 EA
LEM	LDW280-28051	LTA-8(18)	1 EA

PART NO. LDW280-11151 -1 & -3 GRUMMAN SCH INFO 31-3

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

GRUMMAN REL INFO
PRIM. NO. VE001 215 MP12

DRAWN BY	DE CALANDRA	4-26
CHECKED BY		
LAYOUT BY	J. CALANDRA	4-26
GRP LDR	G. Preston	4/27
VDI		4/27
STRUCT		4/27
STRUCT		4/28
WEIGHTS		4-29
PROJ		4-28
RELEASE	B. Carmona	5-3-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

BRACKET ASSY
ASCENT STAGE-CABIN-EQUIP LINES

CONTRACT NO. NAS-9-1100 DOCUMENTATION TYPE II
CODE IDENT NO. 26512 SIZE F LDW280-11151
SCALE FULL LINE ITEM #1 SHEET 1

LDW280-11151

LDW280-11153

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-54027	LEM-6(36)	1 EA
LEM	LDW280-54027	LEM-5(35)	1 EA
LEM	LDW280-54027	LEM-4(34)	1 EA
PART NO. LDW280-11153-11,-13,-14,-15,-16 & -17		GAEC SCH NO. 325	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	—	GRUMMAN REL INFO
LAST DASH NO. USED	-17	PRIM NO. 215 · LE(001) MP17 · JR 5/21

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO.		LINE ITEM	DOCUMENTATION TYPE
DRAWN BY	C. BAIS 5-16-66	RELIABILITY	
LAYOUT BY	VALENTINE		
CHECKED BY	F 5-18-66		
GP LEADER	Phillips 5/19/66		
VEH DES INT	[illegible] 5/19		
STRUCTURES	[illegible] BWS 5/20	PROJ ENGR	Blumbelt 1 June '66
STRUCTURES	Hilderman 5/20	REL GROUP	Botts 6-2-66
WEIGHTS	W. L. Mauldin 5/31		

® GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE- MID SECTION
X310.500 DOCKING TUNNEL

SIZE	CODE IDENT NO.	
B	26512	LDW280-11153
SCALE	NONE	SHEET 1.00 OF 3

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11153-17	E	DOUBLER	AL ALLOY SH	QQ-A-250/12	7075-T6	.063 X 2 1/2 X 4 1/4	NONE	88	
		-16		ANGLE			7075	.063 X 2 3/8 X 12 3/4	T6		
		-15						.063 X 2 3/8 X 12 3/4			
		-14						.040 X 2 3/8 X 14 1/2			
		-13						.040 X 2 3/8 X 14 1/2			
		LDW280-11153-11	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.063 X 2 5/8 X 10 3/4	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP 14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11153
SCALE NONE		SHEET 2.00

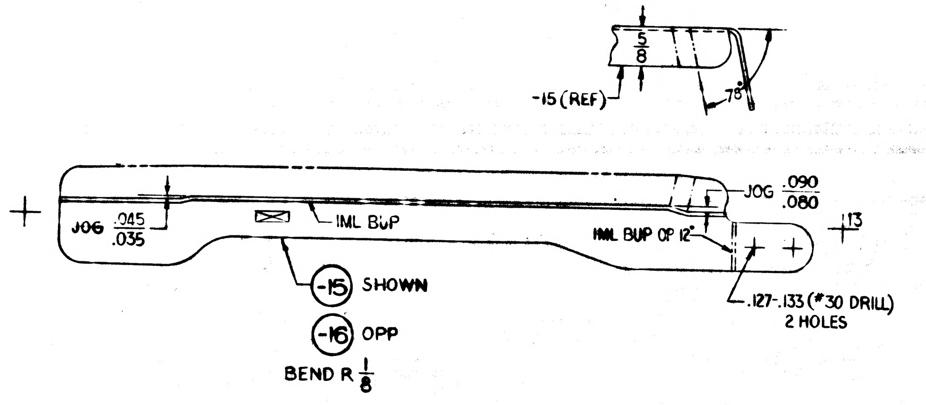
ENG 77.2 7-65

01

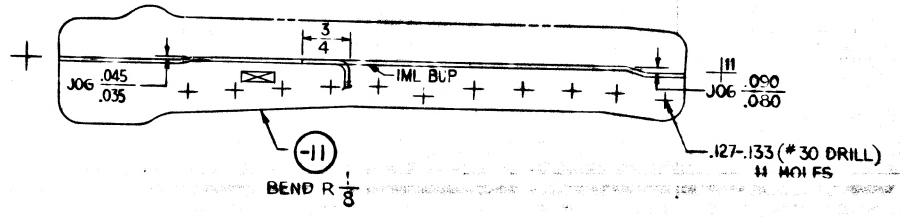
NAS 9-1100

TRAN O.K.

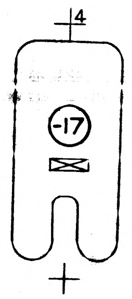
NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS

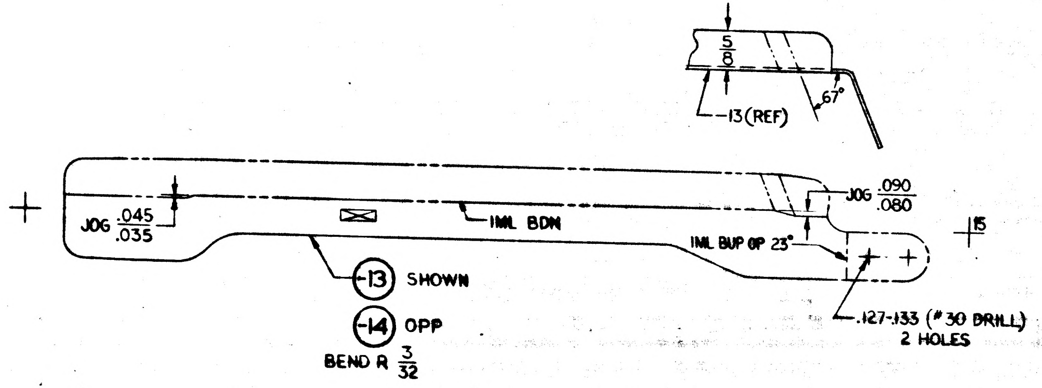


5/8
-15 (REF)
78°
JOG .045/.035
IML BUP
JOG .090/.080
IML BUP OP 12°
.13
.127-.133 (#30 DRILL)
2 HOLES
-15 SHOWN
-16 OPP
BEND R 1/8



3/4
IML BUP
JOG .045/.035
.11
JOG .090/.080
.127-.133 (#30 DRILL)
11 HOLES
-11
BEND R 1/8





5/8
-13 (REF)
67°
JOG .045/.035
IML BDN
JOG .090/.080
IML BUP OP 23°
.15
.127-.133 (#30 DRILL)
2 HOLES
-13 SHOWN
-14 OPP
BEND R 3/32

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-11153

LDW280-11153

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

LEM	SIZE F	CODE IDENT NO. 26512	LDW280-11153
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

FOR PHOTO REPRODUCTION

K2

NAS 9-1100

01

24 ✱

ENG 33.2 REV 3-60

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280	EO NO. 296
CONTROL INFO NO. LDW280 A 0658	

✱

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9 (39), LEM-10(40), LEM-11(41), LEM-12 (42), LEM-13 (43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
✓ LDW280-10981	A1	SEE DRAWING
✓ -11015	B1	
✓ -11025	B1	
✓ -11028	B4	
✓ -11035	A2	
-11036	B1	
-11039	A1	
-11045	A1	
-11048	B1	
-11050	C1	
P11055	B2	
P11056	C2	
-11067	B1	
-11068	B1	
H11069	B1	
-11070	C1	
-11071	A1	
-11072	A1	
-11073	A2	
P11087	B1	
-11103	A1	
-11116	A1	
-11119	B1	
-11123	A2	
-11128	C1	
-11149	A1	
-11153	A1	
-11154	A2	
-11155	A1	
-11156	B1	
-11157	B2	
LDW280-11160	A1	SEE DRAWING

✱ USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG		
REASON FOR EO		DESCRIPTION OF EO		GAEC C EO RELEASE
ADDITIONAL REQUIREMENTS		FOR DASH ✱ ADDED LEM-7 THRU LEM-15 EFF.		10-6

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM-9(39)
LEM		LEM-10(40) LEM-11(41)	LEM-12(42)
LEM		LEM-13(43) LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD		DISPOSITION OF PARTS		
REVISE DWG ✓	RECORD EO	REWORK: NOT REQ'D	SCRAP	

	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY	RP			—				
DATE	9/23/66			—	9.29		10-6-66	10-3-66

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	NOTED	LE0280	296

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 35

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280
EO NO. 1166
CONTROL INFO NO. LDW280B-5488

IN M/B ADD EFF: "TEST 75" N/A: LSK280-11193 AS SHOWN BELOW

DRAWING NUMBER	QTY.	CHG. No.	DRAWING TITLE
LDW280-10498-16	1 REQ.	D5	SEE DWG.
LDW280-10518-12	1 REQ.	B2	
LDW280-10519-12	1 REQ.	B3	
LDW280-11153-11 -13 -14 -15 -16 -17	1 REQ. EA.	A2	
LDW280-23028-2-1	1 REQ.	G4	
LDW280-52477-1	1 REQ.	B3	
LDW280M10403-2	1 REQ.	C4	
LDW280M10404-2	1 REQ.	C5	
LDW280M10447-2	1 REQ.	D1	
LDW280M10484-2	1 REQ.	C3	SEE DWG.

01
NAS 9-1100

*- USE APPLICABLE DASH NUMBERS IN DESCRIPTION

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☑	LCD3428	CCA 1560

REASON FOR EO: TO UPDATE TEST SPECIMEN

DESCRIPTION OF EO: IN M/B: DASH *, ADDED EFF: TEST 75

GAEC EO RELEASE: ® C

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO
LM		TEST 75	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK: NOT SCRAP: REQ'D

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY				FDF	CW			
DATE	9/13/68			9-13-68	9/13/68		9/13/68	10-18-68
	VDI							

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO. LEO280
EO NO. 1166

CDR 9-18-68
ISSUED BY W. PAIUK
SECTION VEH. DES. INT.
GROUP NO. 335 PL 25

ENG 32.1 REV 3-65

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW280-11153	EO NO. A3
CONTROL INFO NO. LM-3-7136	

IN MOD./BLK (ON-17)

N/A LDW280-54027 (S/B) LDW280-23296

* REF LDW280-23296, EO CONT# LM 3-7138
LDW280-54027, EO CONT# LM 3-7137

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG	

REASON FOR EO: INCORRECT CALL OUT FOR N/A REQMTS.

DESCRIPTION OF EO: IN MOD/BLK (ON-17) N/A LDW280-23296 (WAS) LDW280-54027

GAEC EO RELEASE

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM4(34)	
		THRU	
		LM14(44)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓		NONE*	
REVISE DWG	RECORD EO	REWORK	SCRAP

APPROVED BY					BM	BM		
DATE	3-4-70			2/4/70	2-20-70	2-20-70	3-4-70	2/25/70
	VD1	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	ANGLE, ASCENT STAGE, MID. SECT X310.50 DOCKING TUNNEL	LDW280-11153	A3

ISSUED BY VPE/M.D REYES/X2151 SECTION VD1/J.VALENTINE GROUP NO. 335 PL 25

01
NAS 9-1100

LDW280-11154 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53211	LM-15 (45)	1
		LM-14 (44)	1
		LM-13 (43)	1
		LM-12 (42)	1
		LM-11 (41)	1
		LM-10 (40)	1
		LM-9 (39)	1
		LM-8 (38)	1
		LM-7 (37)	1
		LM-6 (36)	1
		LM-5 (35)	1
		LM-4 (34)	1
LM	LDW280-53211	LM-3 (33)	1

PART NO. LDW280-11154-11

WORK PKG FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED —
LAST DASH NO. USED -11

GRUMMAN REL INFO A
PRIM NO. 215 | VK (001) | MP-1A-4/9/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM
DOCUMENTATION TYPE II

DRAWN BY	H. BARFOOT 4/1/68	RELIABILITY	
LAYOUT BY	G. ROCKLEIN 5/25/66		
CHECKED BY	D. FASS 4-8-68		
GP LEADER			
VEH DES INT	RIP. 5/26/66		
STRUCT	BW 5/31/66	PROJ ENGR	
STRUCT		REL GROUP	BOTTI 6-2-66
WEIGHTS			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

STIFFENER
ASCENT STAGE-MID SECT-HEAT EXCHANGER SUPPORT +X233.5 DECK

SIZE B | CODE IDENT NO. 26512 | LDW280-11154 | A (A)
SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00, 1.10 2.00, 3.00						EO A1	EOA1 INITIAL DWG RELEASE PARTS MADE PER EO	LM-3, LM-4, LM-5 & LM-6	NOT	REQD	BARFOOT 4/1/68		
	2	1.00		Ⓔ				LEO 280-296	FOR -1 ADDED LM-7 THRU LM-15 EFF	LM-7 THRU LM-15					

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCT	STRUCT	WEIGHTS	RELIABILITY
	A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11154	A Ⓐ
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11154-11	E	STIFFENER	AL ALLOY SH	QQ-A-250/12	7075	.045 X 2 X 7	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030
						T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-11154
A Ⓐ

SCALE NONE
SHEET 2.00

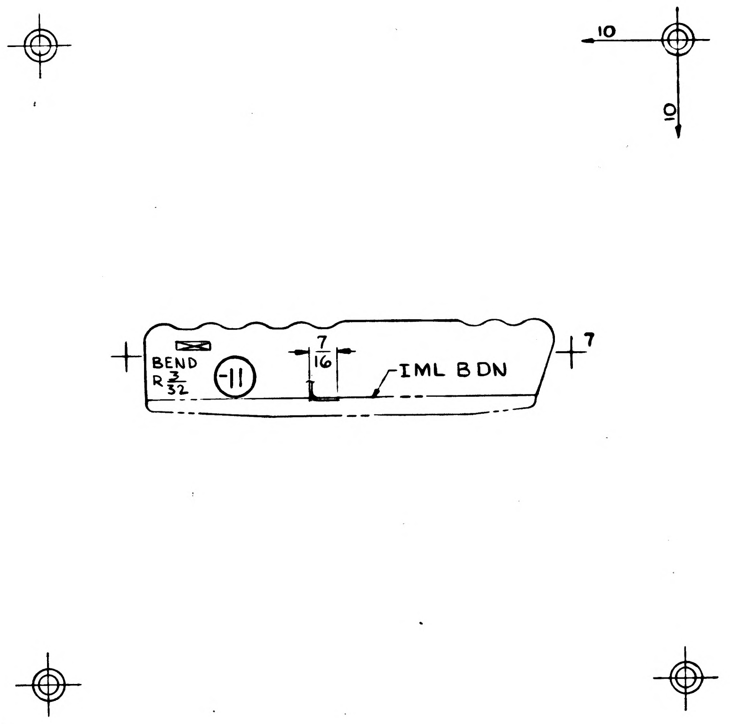
ENG 77.2 7-65

01

NAS 9-1100

ENG 771 2 4-67

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓



	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
LM	SIZE C	CODE IDENT NO. 26512	LDW280-11154	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

LDW280-11154 A

01

NAS 9-1100

LDW280-11155

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53476-1	LEM 6 (36)	1 EA
↕	↕	LEM 5 (35)	1 EA
		LEM 4 (34)	1 EA
LEM	LDW280-53476-1	LEM 3 (33)	1 EA

PART NO. LDW280-11155-11,-13,-15

GAEC SCH NO. 32-2

3

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	—	GRUMMAN REL^G INFO		
LAST DASH NO. USED	-15	PRIM NO.	VE(001)	
		215	MP12 ✓	SR 5.17

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM #1 | DOCUMENTATION TYPE II

DRAWN BY	A.ESPOSITO 5-10-66	RELIABILITY	
LAYOUT BY	G.ROCKLEIN		
CHECKED BY	5-12-66		
GR LEADER	5/14/66		
VEH DES INT	5/17		
STRUCTURES	DW 5/16	PROJ ENGR	5-23
STRUCTURES	Hilderman 5/16	REL GROUP	Botti 5-27-66
WEIGHTS	PJW 5-23		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHANNEL
ASCENT STAGE MID SECTION
+X253.5 DECK

SIZE B | CODE IDENT NO. 26512 | LDW280-11155

SCALE NONE | SHEET 1.00 OF 3

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11155-15	E	STRAP	AL ALLOY SH	QQ-A-283	7075-T6	.063×2 1/8×4 3/8	NONE	88	6B
		LDW280-11155-13	E	STRAP	AL ALLOY SH	QQ-A-283	7075-T6	.063×1 1/2×5 1/2	NONE	88	3B
		LDW280-11155-11	E	CHANNEL	AL ALLOY SH	QQ-A-283	7075	.040×4 7/8×9 1/4	T6	88	6C

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9010
						T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11155

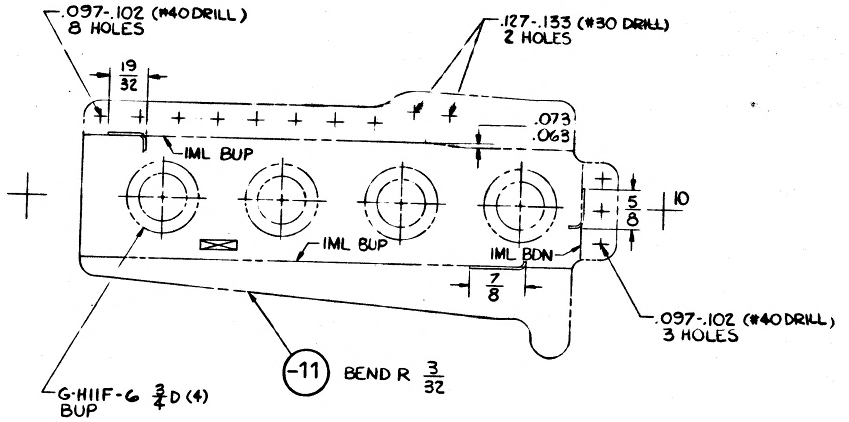
SCALE NONE

SHEET 2.00

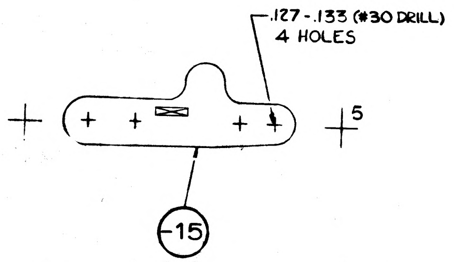
ENG 77.2 7-66

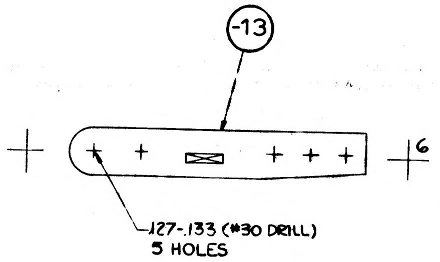
01

NAS 9-1100


.097-.102 (#40 DRILL)
8 HOLES
19/32
.127-.133 (#30 DRILL)
2 HOLES
.073
.063
IML BUP
IML BUP
IML BDN
5/8
10
7/8
.097-.102 (#40 DRILL)
3 HOLES
G-H11F-6 3/4 D (4)
BUP
-11
BEND R 3/32

NOTE:
NO TOOLING HOLES PERMITTED IN PARTS.


.127-.133 (#30 DRILL)
4 HOLES
5
-15


-13
6
.127-.133 (#30 DRILL)
5 HOLES

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	√

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
D	26512	LDW280-11155

MODEL OR END ITEM
SCALE FULL
SHEET 3.00

FOR PHOTO REPRODUCTION
K2

NAS 9-1100

24 *

ENO 20.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280 — EO NO. 296
CONTROL INFO NO. LDW280 A 0658

*
TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS
THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37),
LEM-8(38), LEM-9 (39), LEM-10(40), LEM-11(41), LEM-12 (42), LEM-13(43), LEM-14(44)
AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
✓ LDW280-10981	A1	SEE DRAWING
↑		↑
✓ -11015	B1	
✓ -11025	B1	
-11028	B4	
-11035	A2	
-11036	B1	
-11039	A1	
-11045	A1	
-11048	B1	
-11050	C1	
P11055	B2	
P11056	C2	
-11067	B1	
-11068	B1	
H11069	B1	
-11070	C1	
-11071	A1	
-11072	A1	
-11073	A2	
P11087	B1	
-11103	A1	
-11116	A1	
-11119	B1	
-11123	A2	
-11128	C1	
-11149	A1	
-11153	A1	
-11154	A2	
-11155	A1	
-11156	B1	
↓ -11157	B2	↓
LDW280-11160	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
ADDITIONAL REQUIREMENTS	FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.	10.8

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38) LEM 9(39)	
LEM		LEM-10(40) LEM-11(41) LEM-12 (42)	
LEM		LEM-13(43) LEM-14(44) LEM-15(45)	

DRAWING CHANGE REQD	DISPOSITION OF PARTS	APPROVED BY								
✓ REVISE DWG	NOT REQ'D	DATE 9/23/66				9.9		10-6-66	10-3-66	
RECORD EO	REWORK / SCRAP	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG		

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	NOTED	LE0280	296

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 3

01
NAS 9-1100

ENG 32.1 REV 3-65

FITH

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

*

DWG. NO. LDW 280-11155		EO NO. A2
CONTROL INFO NO. LDW 280A- 7217		

REMOVE -11 REQUIREMENTS

N/A LDW 280-53476
LM-3(33) THRU LM-15(45)

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD# 1244	5

REASON FOR EO	DESCRIPTION OF EO	Ⓡ GAEC EO RELEASE C
INCREASED FITH LOADS	DELETED -11	JK 6/6/7

MODEL	EFFECTIVITY		
	~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	~~SUB CONTR UNIT NO.~~
LM	LM-3(33) THRU LM-15(45)		

DRAWING CHANGE REQD		DISPOSITION OF PARTS										
✓			-11	APPROVED BY	Gap			F.N.K.	JV		Gam	
				DATE	5/25/67			5/25/67	5/26		5/26/67	6/6/67
REVISE DWG	RECORD EO	REWORK	SCRAP	5	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	CHANNEL- MID SECTION, +X 253.5 DECK ASCENT STAGE,	LDW 280-11155	A2

ISSUED BY GEO. W. ROCKLEIN x7033 5/25/67
SECTION VEH. DES INT.
GROUP NO. 335
PL 25

01

NAS 9-1100

LDW280-11156 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53476	LEM-15(45)	1 EA
		THRU	
LEM	LDW280-53476	LEM-7(37)	1 EA
LEM	LDW280-53476	LEM-6(36)	1 EA
LEM	LDW280-53476	LEM-5(35)	1 EA
LEM	LDW280-53476	LEM-4(34)	1 EA
LEM	LDW280-53476	LEM-3(33)	1 EA
PART NO. LDW280-11156-11, -23 & -25		GAEC SCH NO. 32-2	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28476	LEM-2(32)	1 EA
LEM	LDW280-28476	LEM-1(31)	1 EA
LEM	LDW280-28476	LTA-8(18)	1 EA
PART NO. LDW280-11156-13, -17, -19 & -21		GAEC SCH NO. 32-2	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53476	LEM-15(45)	1
		THRU	
LEM	LDW280-53476	LEM-7(37)	1
LEM	LDW280-53476	LEM-6(36)	1
LEM	LDW280-53476	LEM-5(35)	1
LEM	LDW280-53476	LEM-4(34)	1
LEM	LDW280-53476	LEM-3(33)	1
LEM	LDW280-28476	LEM-2(32)	1
LEM	LDW280-28476	LEM-1(31)	1
LEM	LDW280-28476	LTA-8(18)	1
PART NO. LDW280-11156-15		GAEC SCH NO. 32-2	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	"A"
LAST DASH NO. USED	-25

GRUMMAN RELINFO B

PRIM NO.	JK(601)
215	ME-168 1/3/7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS — ANGLES ± 1/32 ± .020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY	SUPPA 5-9-66	RELIABILITY	
LAYOUT BY	ROCKLEIN		
CHECKED BY	Katzman 5-13-66		
GR LEADER	5/13/66		
VEH DES INT	5/13		
STRUCTURES	5/13	PROJ ENGR	5-22
STRUCTURES	5-14	REL GROUP	5-31-66
WEIGHTS	DAL 5-20		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ZEE
ASCENT STAGE - MID SECT - SHIELD SUPPORT

SIZE	CODE IDENT NO.		
B	26512	LDW280-11156	B
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.10 & 3.00 1.00	F8					E.O. A1	ON-13 ADDED .906±.010(2), .453±.010(2), DRILL#30 (.127-.133)(8) & DRILL#19(.165-.171)(2), 5/16, 3/8 & 1½. ADDED SH#1.10 SH 1.00 OF 4 WAS SH 1.00 OF 3.	LTA-8 & LEM-1 THRU LEM-6	✓	RL	MAYBO 7-11-66		
	2	1.10 & 3						EO A2	FOR -13 RELOCATED MOLD LINE & ADDED FLANGE WIDTH	LTA-8 & LEM 1 THRU LEM 6	✓	RS	WISNIEWSKI 7-20-66		
B	1.	1.0, 1.10						LEO280-296	FOR-11, -13, -15 & -17, ADDED LM-7 THRU LM-15 EFF.	LM-7 THRU LM-15	NOT	REQ'D	E. COX 12-13-68		
	2.							EOB2	CANCELLED BY EOB4	LM-4 (34) THRU LM-15 (45)	✓				
	3	1.0, 110, 2.00, 3.00	B7					EOB3	CREATED -23, EFFECTIVITY OF -17 WAS LTA-8(18) & LM-1(31 THRU LM-15 (45)	LM-3 (33) THRU LM-15 (45)		✓			
	4.						✓	EOB4	THIS EO CANCELS E.O. B2	LM-4 THRU LM-15	NOT	REQD			
	5.	1.00, 1.10 2.00, 3.00	H7				✓	EO B5	CREATED-25 EFF LM-3(33) THRU LM-15(45), -13 EFF WAS LTA-8, LM-1 THRU LM-15	LTA-8(18) LM-1 THRU LM-15 (45)		✓ -13	E.C.G.		
	6						✓	Ⓟ	REF EO B5: EFF. OF EO B5, LTA-8, LM-1 THRU LM-15 SHOULD BE LM-3 THRU LM-15	LM-3 THRU LM-15	NOT	REQ'D	DEUTSCH 12-13-68	F. [illegible] 12-12-68	

CHG APPROVED

LTR	GROUP LDR	VEH DESIN	STRUCTURES	STRUCTURES	WEIGHT	RELIABILITY
B	[illegible] 12/23/68	[illegible] 1/2/69		[illegible] 1/6/69		

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11156	B Ⓑ
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		DW280-11156-25	E	CHANNEL	AL. ALLOY SH	QQ-A-250/12	7075	040 x 4 x 12	T6	88	
		-23	E	BRACKET	AL. ALLOY SH.	QQ-A-250/12	7075	.040 x 3 x 3	T6	86	
		-21	E	ZEE	AL ALLOY SH	QQ-A-250/12	7075	.040 x 4 7/8 x 16 7/8	T6	88	
		-19		CLIP		QQ-A-250/12	7075	.040 x 1 7/8 x 2 1/4	T6		
		-17		BRACKET		QQ-A-250/12	7075	.040 x 2 1/2 x 3 1/2	T6		
		-15		STRAP		QQ-A-250/12	7075-T6	.063 x 2 7/8 x 4 7/8	NONE		
		-13		CHANNEL		QQ-A-250/12	7075	.040 x 4 1/8 x 11 3/8	T6		
		LDW280-11156-11	E	ZEE	AL ALLOY SH	QQ-A-250/12	7075	.040 x 4 7/8 x 16 7/8	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11156	B

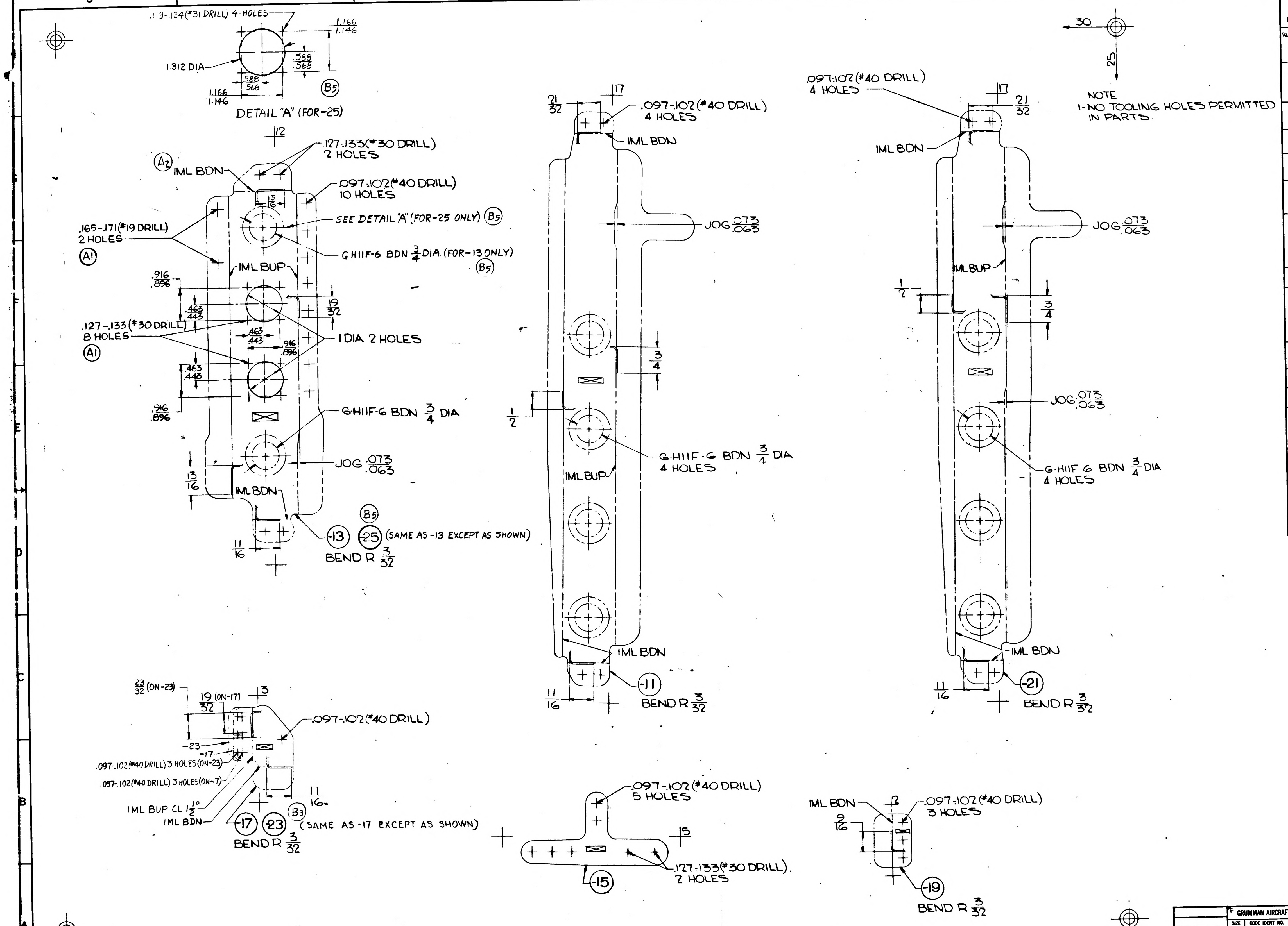
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



8
7
119-124
6
5
4
3
2
1
.119-.124 (#31 DRILL) 4-HOLES
1.166
1.146
1.312 DIA
.588
.568
.588
.568
1.166
1.146
B5
DETAIL "A" (FOR-25)
12
.127-.133 (#30 DRILL) 2 HOLES
A2
IML BDN
.097-.102 (#40 DRILL) 10 HOLES
13/16
SEE DETAIL "A" (FOR-25 ONLY) B5
.165-.171 (#19 DRILL) 2 HOLES
A1
G HIIF-6 BDN 3/4 DIA (FOR-13 ONLY)
B5
IML BUP
.916
.896
.463
.443
19/32
.127-.133 (#30 DRILL) 8 HOLES
A1
.463
.443
.916
.896
1 DIA 2 HOLES
.463
.443
.916
.896
G-HIIF-6 BDN 3/4 DIA
13/16
JOG .073/.063
IML BDN
B5
-13
-25
(SAME AS -13 EXCEPT AS SHOWN)
11/16
BEND R 3/32
21/32
17
.097-.102 (#40 DRILL) 4 HOLES
IML BDN
JOG .073/.063
3/4
1/2
G-HIIF-6 BDN 3/4 DIA 4 HOLES
IML BUP
IML BDN
11/16
-11
BEND R 3/32
.097-.102 (#40 DRILL) 4 HOLES
17
21/32
IML BDN
JOG .073/.063
IML BUP
1/2
3/4
JOG .073/.063
G-HIIF-6 BDN 3/4 DIA 4 HOLES
IML BDN
11/16
-21
BEND R 3/32
30
25
23/32 (ON-23)
19/32 (ON-17)
3
.097-.102 (#40 DRILL)
-23
-17
.097-.102 (#40 DRILL) 3 HOLES (ON-23)
.097-.102 (#40 DRILL) 3 HOLES (ON-17)
IML BUP CL 1 1/2°
IML BDN
11/16
-17
-23
B3
(SAME AS -17 EXCEPT AS SHOWN)
BEND R 3/32
.097-.102 (#40 DRILL) 5 HOLES
15
.127-.133 (#30 DRILL) 2 HOLES
-15
IML BDN
13
9/16
.097-.102 (#40 DRILL) 3 HOLES
-19
BEND R 3/32
H
G
F
E
D
C
B
A

NOTE
1- NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-11156 B

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE	CODE IDENT NO.		R
F	26512	LDW280-11156	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

FOR PHOTO REPRODUCTION

K2

01

NAS 9-1100

LDW280-11157 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53476	LEM-6(36)	1
LEM	LDW280-53476	LEM-5(35)	1
LEM	LDW280-53476	LEM-4(34)	1
LEM	LDW280-53476	LEM-3(33)	1
PART NO. LDW280-11157-21		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28476	LEM-2(32)	1
LEM	LDW280-28476	LEM-1(31)	1
LEM	LDW280-28476	LTA-8(18)	1
PART NO. LDW280-11157-17		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53476	LEM-6(36)	1EA
LEM	LDW280-53476	LEM-5(35)	1EA
LEM	LDW280-53476	LEM-4(34)	1EA
LEM	LDW280-53476	LEM-3(33)	1EA
LEM	LDW280-28476	LEM-2(32)	1EA
LEM	LDW280-28476	LEM-1(31)	1EA
LEM	LDW280-28476	LTA-8(18)	1EA
PART NO. LDW280-11157-11;13;15 & -19		GAEC SCH NO. 32-2	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	—	GRUMMAN REL INFO A		
LAST DASH NO. USED	-21	PRIM NO. 215	LE(001) MP12	JR 3.14

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	M.H.MULLER 5/9/66	RELIABILITY	
LAYOUT BY	G. ROCKLEIN		
CHECKED BY	J Karzman 5-12-66		
GR LEADER	R.V. PHILLIPS 5-11-66		
VEH DES INT	[illegible] 5/12		
STRUCTURES	[illegible] 5/13	PROJ ENGR	[illegible] 5-22
STRUCTURES	[illegible] 5-14	REL GROUP	A. Caramanica 5-31
WEIGHTS	[illegible] 5-20		

Ⓡ GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ZEE
BACKUP STRUCTURE
CANTILEVER SHIELD SUPPORT

SIZE	CODE IDENT NO.		
B	26512	LDW280-11157	A
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 12-65

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00, 1.10, 2.00, 3.00	3B					EO A1 ®	SHEET 1.00 OF 4 WAS SHEET 1.00 OF 3 ADDED SHEET 1.10 RESTRICTED EFF OF -17, ADDED -21	LTA-8, LEM-1 THRU LEM-6		-17	C. BAIS 8/9/66	☒	☒

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY				
A										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11157	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11157-21	E	CLIP	AL ALLOY SH	QQ-A-250/12	7075	.040X1¼X3⅛	T6	88	
								-19		CLIP		QQ A 250/4	2024	.100X2⅝X2⅞	T42	88	
								-17		CLIP		QQ-A-250/12	7075	.040X1¼X3⅛	T6	88	
								-15		CLIP				.056X2⅝X2⅞	T6	88	
								-13		CHANNEL				.040X4¼X11¼	T6	88	
								LDW280-11157-11	E	ZEE	AL ALY SH	QQ-A-250/12	7075	.040X3⅜X16¾	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030
T6	AL HEAT TREAT	MIL-H-6088
T42	AL HEAT TREAT	MIL-H-6088

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

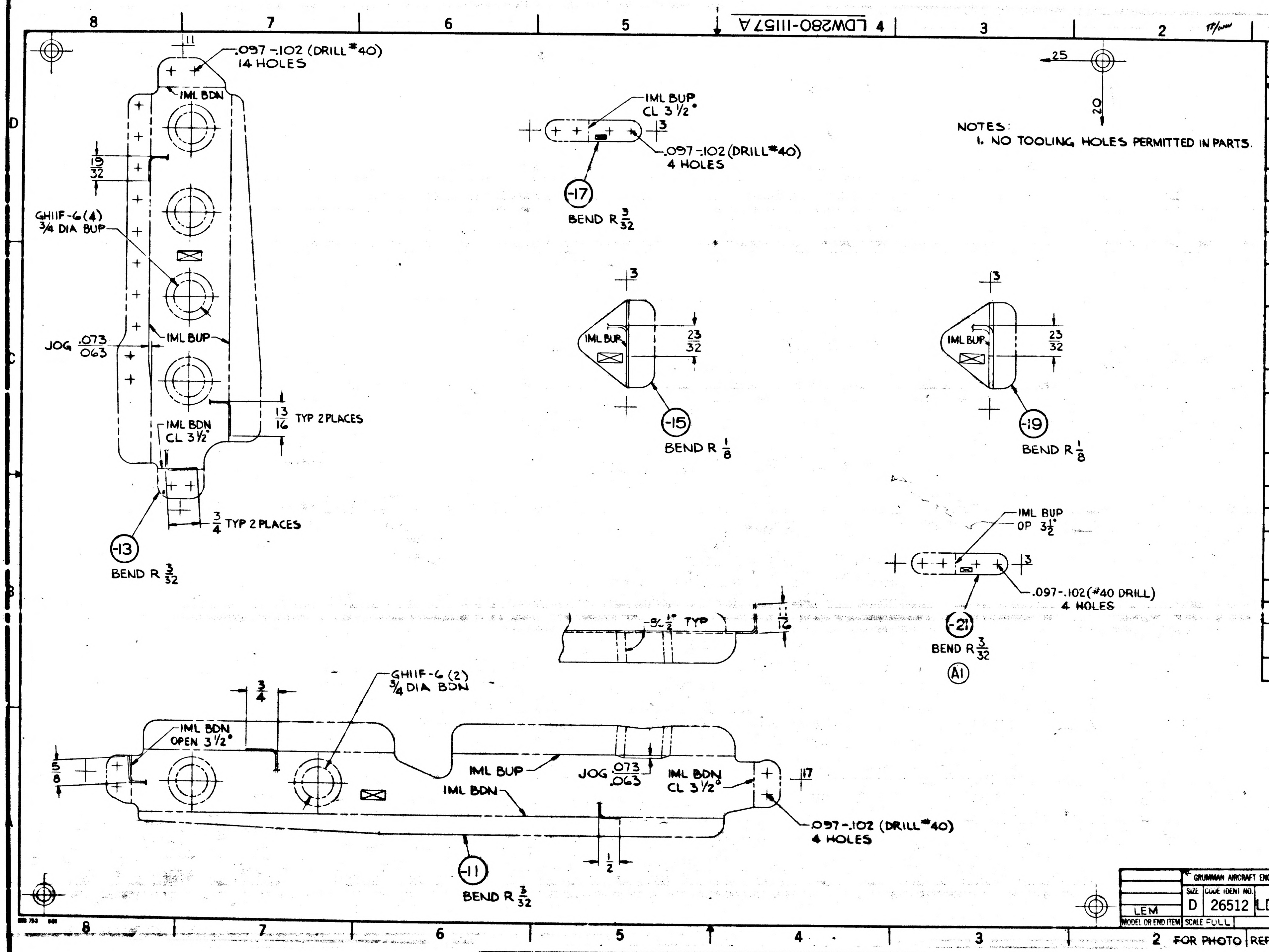
SIZE B | CODE IDENT NO. 26512 | LDW280-11157 | A

SCALE NONE | SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


8
7
6
5
4
3
2
1
D
C
B
A
11
.097-.102 (DRILL #40)
14 HOLES
IML BDN
19/32
GHIIF-6 (4)
3/4 DIA BUP
JOG .073/.063
IML BUP
IML BDN
CL 3 1/2°
13/16 TYP 2 PLACES
3/4 TYP 2 PLACES
-13
BEND R 3/32
IML BUP
CL 3 1/2°
3
.097-.102 (DRILL #40)
4 HOLES
-17
BEND R 3/32
3
IML BUP
23/32
-15
BEND R 1/8
3
IML BUP
23/32
-19
BEND R 1/8
25
20
IML BUP
OP 3 1/2°
3
.097-.102 (#40 DRILL)
4 HOLES
-21
BEND R 3/32
A1
9/32 TYP
1/16
GHIIF-6 (2)
3/4 DIA BDN
3/4
IML BDN
OPEN 3 1/2°
5/8
IML BUP
JOG .073/.063
IML BDN
CL 3 1/2°
17
IML BDN
.097-.102 (DRILL #40)
4 HOLES
1/2
-11
BEND R 3/32

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~[illegible]~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .000 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROMATE PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.001	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ✓ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
LEM	SIZE D	CODE IDENT NO. 26512	LDW280-11157	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

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24 ENG 33.2 REV 3-65 *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280 | EO NO. 296
CONTROL INFO NO. LDW280.A.0658

*

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9 (39), LEM-10(40), LEM-11(41), LEM-12 (42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-10981	A1	SEE DRAWING
-11015	B1	
-11025	B1	
-11028	B4	
-11035	A2	
-11036	B1	
-11039	A1	
-11045	A1	
-11048	B1	
-11050	C1	
P11055	B2	
P11056	C2	
-11067	B1	
-11068	B1	
H11069	B1	
-11070	C1	
-11071	A1	
-11072	A1	
-11073	A2	
P11087	B1	
-11103	A1	
-11116	A1	
-11119	B1	
-11123	A2	
-11128	C1	
-11149	A1	
-11153	A1	
-11154	A2	
-11155	A1	
-11156	B1	
-11157	B2	
LDW280-11160	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC C EO RELEASE: E 10.8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM 9(39)
LEM		LEM-10(40) LEM-11(41)	LEM-12 (42)
LEM		LEM-13(43) LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

	APPROVED BY	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
	WP			—			RMC	
DATE	9/23/66			—	9.19		10-6-66	10-3-66
	V.D.I.							

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LE0280
EO NO.: 296

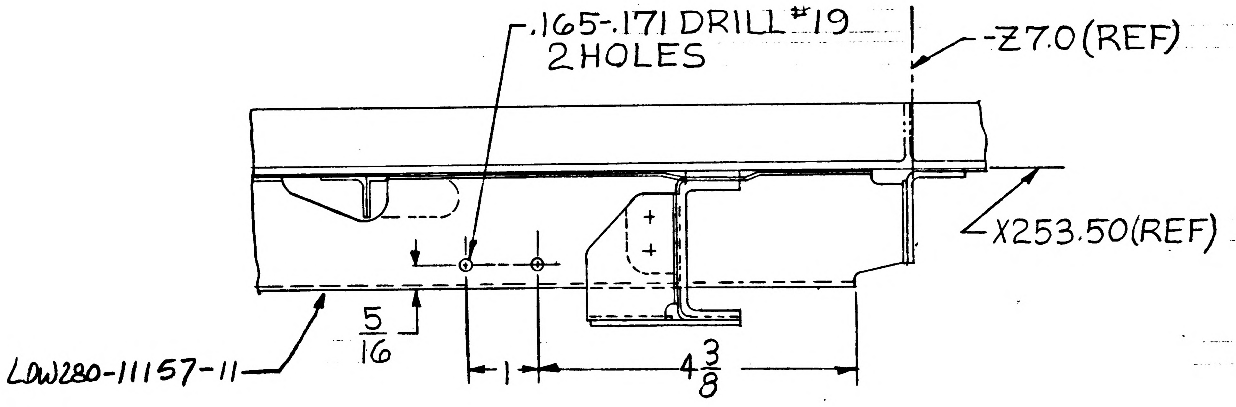
ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO 280 PL 35

01
NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO	LDW280-11157	EO NO.	B3
CONTROL INFO NO.	LDW280A-2308		



VIEW LKG INBD RH SIDE
LDW280 11157-11

* ON LTA-8 LM-1 & LM-2 USE AS IS

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: PROVIDE MOUNTING HOLES FOR ZONE BOX

DESCRIPTION OF EO: ADDED: #19 DRILL 2 HOLES TO -11

GAEC EO RELEASE: VE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LTA-8 (10)	LM-1 (31)	
		THRU	
		LM-6 (36)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		*	

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
APPROVED BY					90		RME	
DATE ✓	10/18/66			10/17	10-19		10-22-66	10/22/66

PRIORITY	DRAWING TITLE	DRAWING NO	EO NO.
C	SUPPORT INSTL, ASCENT STAGE MIDSECT SHIELD SUPPORT X253.5 DECK	LDW280-11157	B3

ISSUED BY R.W. NORTON SR (1656a) SECTION EQUIP LINES GROUP NO. 332 PL 35

01

NAS 9-1100

LDW280-11158 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53476	LEM-15(45)	1 EA
		LEM-14(44)	1 EA
		LEM-13(43)	1 EA
		LEM-12(42)	1 EA
		LEM-11(41)	1 EA
		LEM-10(40)	1 EA
		LEM-9(39)	1 EA
		LEM-8(38)	1 EA
		LEM-7(37)	1 EA
	LDW280-53476	LEM-6(36)	1 EA
	LDW280-53476	LEM-5(35)	1 EA
	LDW280-53476	LEM-4(34)	1 EA
	LDW280-53476	LEM-3(33)	1 EA
	LDW280-28476	LEM-2(32)	1 EA
	LDW280-28476	LEM-1(31)	1 EA
LEM	LDW280-28476	LTA-8(18)	1 EA
PART NO. LDW280-11158-11,-13,-15,-17 & -19		GAEC SCH NO. 32-2	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH				
SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED	—
LAST DASH NO. USED	-19

GRUMMAN REL INFO A

PRIM NO. 215 VE(001) MP-A 8-29-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ± 1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 LINE ITEM # 1 DOCUMENTATION TYPE II

DRAWN BY	ROCKLEIN 5/5/66	RELIABILITY	
LAYOUT BY	ROCKLEIN 5/5/66		
CHECKED BY			
GP LEADER	PHILLIPS 5/6/66		
VEH DES INT	BISCHOFF 5/7/66		
STRUCTURES	F.B. B.W. 5/13/66	PROJ ENGR	ALBER 5/18/66
STRUCTURES	HILDERMAN 5/14/66	REL GROUP	BOTTI 5/23/66
WEIGHTS	ROBESCH 5/17/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ZEE
ASCENT STAGE - MID SECTION - SHIELD SUPPORT +X253.5 DECK

SIZE B CODE IDENT NO. 26512 LDW280-11158 A

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11158 "NO CHANGE" 5/23/66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
		1.00, 1.10, 2.00, 3.00							RETRACED "NO CHANGE" LAST REV "NO CHANGE" SHEET 1.00 OF 4 WAS SHEET 1 OF 1 ADDED SHEET, 1.10, 2.00, 3.00. LOFTED DRAWING WAS DIMENSIONED.				C.BAIS 8/8/66		
A	1	3.00	5E					EO A1	TO -13 ADDED DRILL #30 (.127-.133) 4 HOLES & DRILL #19 (.165-.171) 2 HOLES	NOTED	-13		C.BAIS 8/8/66		
	2	1.00, 1.10							IN MOD BLK, ADDED EFF LEM-7(37) THRU LEM-15(45).	LEM-7 THRU-15	NOT	REQD	JAEGGI 8/19/66		

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY	PROJ ENGR	REL GROUP			
	A			6/25								

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11158	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11158-19	E	STRAP	AL ALLOY SH	QQ-A-250/12	7075-T6	.063×2⅞×5	NONE	88	6G
								↑ -17	↑	CLIP	↑	QQ-A-250/12	7075	.040×2½×3⅛	T6	↑	3E
								-15		CLIP		QQ-A-250/4	2024	.100×2¾×2⅞	T42		3C
								↓ -13	↓	CHANNEL	↓	QQ-A-250/12	7075	.040×4¼×11	T6	↓	5E
								LDW280-11158-11	E	ZEE	AL ALLOY SH	QQ-A-250/12	7075	.040×5⅝×16¾	T6	88	6B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6/T42	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

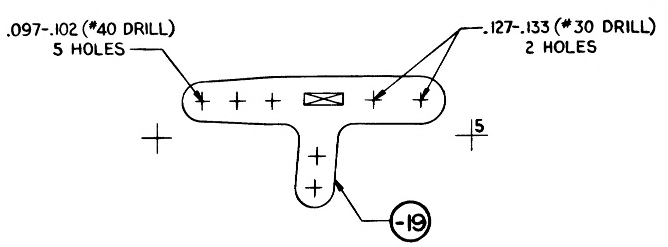
SIZE	CODE IDENT NO.		
B	26512	LDW280-11158	A

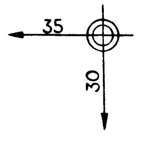
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

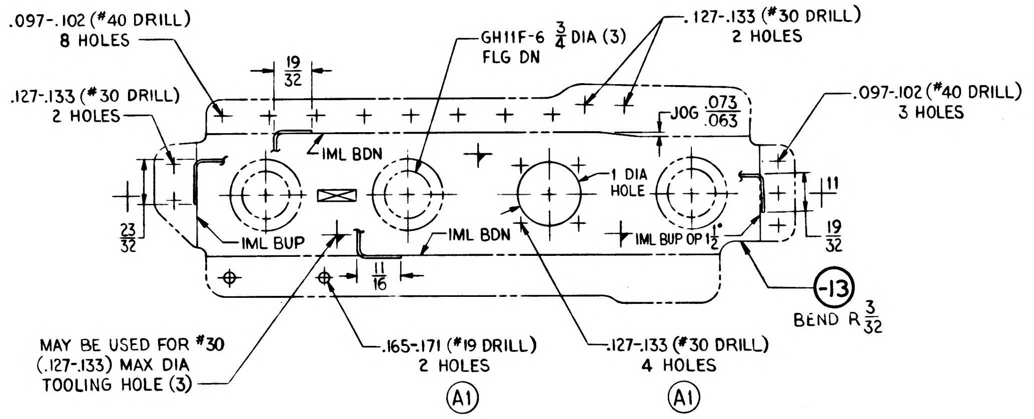
NAS 9-1100

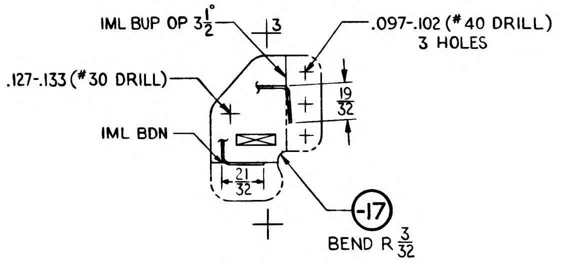

.097-.102 (#40 DRILL)
5 HOLES
.127-.133 (#30 DRILL)
2 HOLES
5
-19

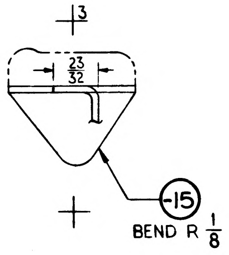


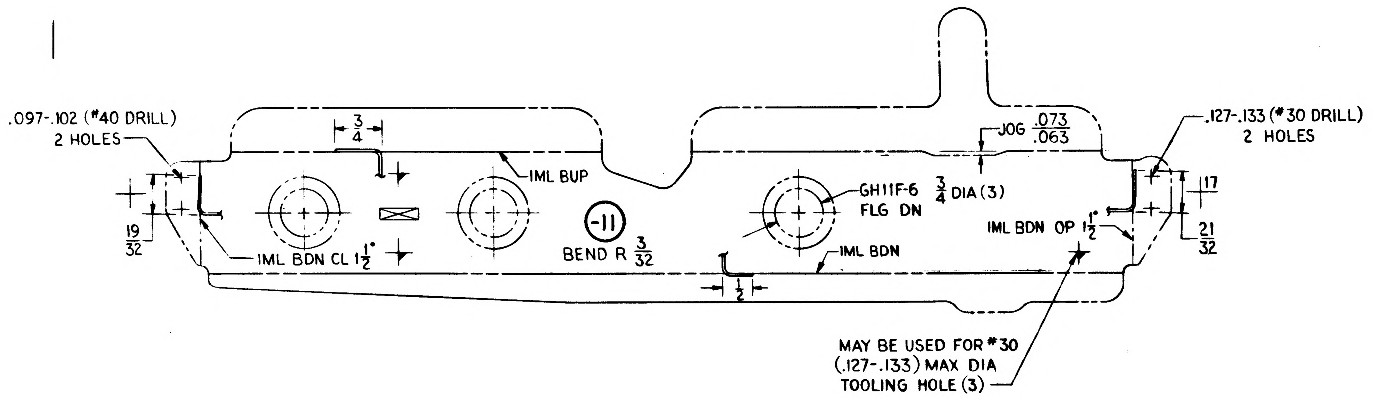
NOTE:

1. NO TOOLING HOLES PERMITTED IN PARTS EXCEPT AS NOTED


.097-.102 (#40 DRILL)
8 HOLES
.127-.133 (#30 DRILL)
2 HOLES
19/32
GH11F-6 3/4 DIA (3)
FLG DN
.127-.133 (#30 DRILL)
2 HOLES
JOG .073/.063
.097-.102 (#40 DRILL)
3 HOLES
IML BDN
1 DIA HOLE
11
19/32
23/32
IML BUP
IML BDN
IML BUP OP 1½°
11/16
-13
BEND R 3/32
MAY BE USED FOR #30
(.127-.133) MAX DIA
TOOLING HOLE (3)
.165-.171 (#19 DRILL)
2 HOLES
A1
.127-.133 (#30 DRILL)
4 HOLES
A1


IML BUP OP 3½°
3
.097-.102 (#40 DRILL)
3 HOLES
.127-.133 (#30 DRILL)
19/32
IML BDN
21/32
-17
BEND R 3/32


3
23/32
-15
BEND R 1/8


.097-.102 (#40 DRILL)
2 HOLES
3/4
IML BUP
JOG .073/.063
.127-.133 (#30 DRILL)
2 HOLES
GH11F-6 3/4 DIA (3)
FLG DN
17
19/32
-11
BEND R 3/32
IML BDN OP 1½°
21/32
IML BDN CL 1½°
IML BDN
1/2
MAY BE USED FOR #30
(.127-.133) MAX DIA
TOOLING HOLE (3)

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN. NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK
LEM
MODEL OR END ITEM
SIZE E
CODE IDENT NO. 26512
LDW280-11158 A
SCALE FULL
SHEET 3.00

FOR PHOTO 1 REPRODUCTION K2

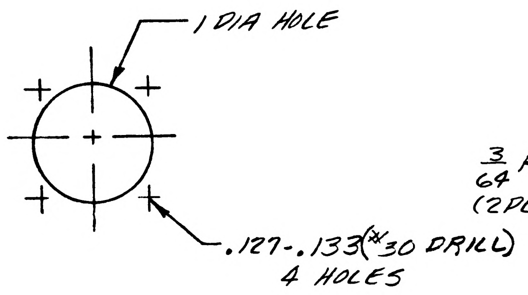
ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

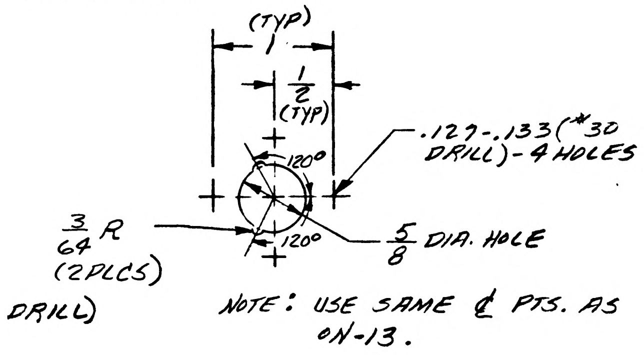
ENGINEERING ORDER

DWG. NO. LDW280-11158		EO NO. B1
CONTROL INFO NO. LM-5-9600		

CREATE LDW280-11158-21, IDENTICAL TO -13 EXCEPT AS SHOWN:
N/A FOR -21 LDW280-53476, MODULES LM-3 THRU LM-15, 1 REQ'D/MODULE.
REMOVE -13 EFFECTIVITY FROM LM-3 THRU LM-15.



-13 (REF)



NOTE: USE SAME ℄ PTS. AS ON -13.

-21 (REF)

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☐	5

REASON FOR EO	DESCRIPTION OF EO	GAEC C EO RELEASE
HOLE IN -13 TOO LARGE FOR CONNECTOR.	CREATED -21. REMOVED -13.	

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3 THRU	LM-15
		(31-45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY				-	JF	CH	RMC	
✓			-13	DATE	12/9/66			-	10-27-66	10-27	10-28-66	10-27-66
REVISE DWG	RECORD EO	REWORK	SCRAP	10-27-66	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	ZEE - A/S - MID-SECT. SHIELD SUPPORT +X253.5 DECK	LDW280-11158	B1

ISSUED BY LIAISON - J. MC GILL X-6452 SECTION VDI-PHILLIPS GROUP NO._____ PL 35
EMF

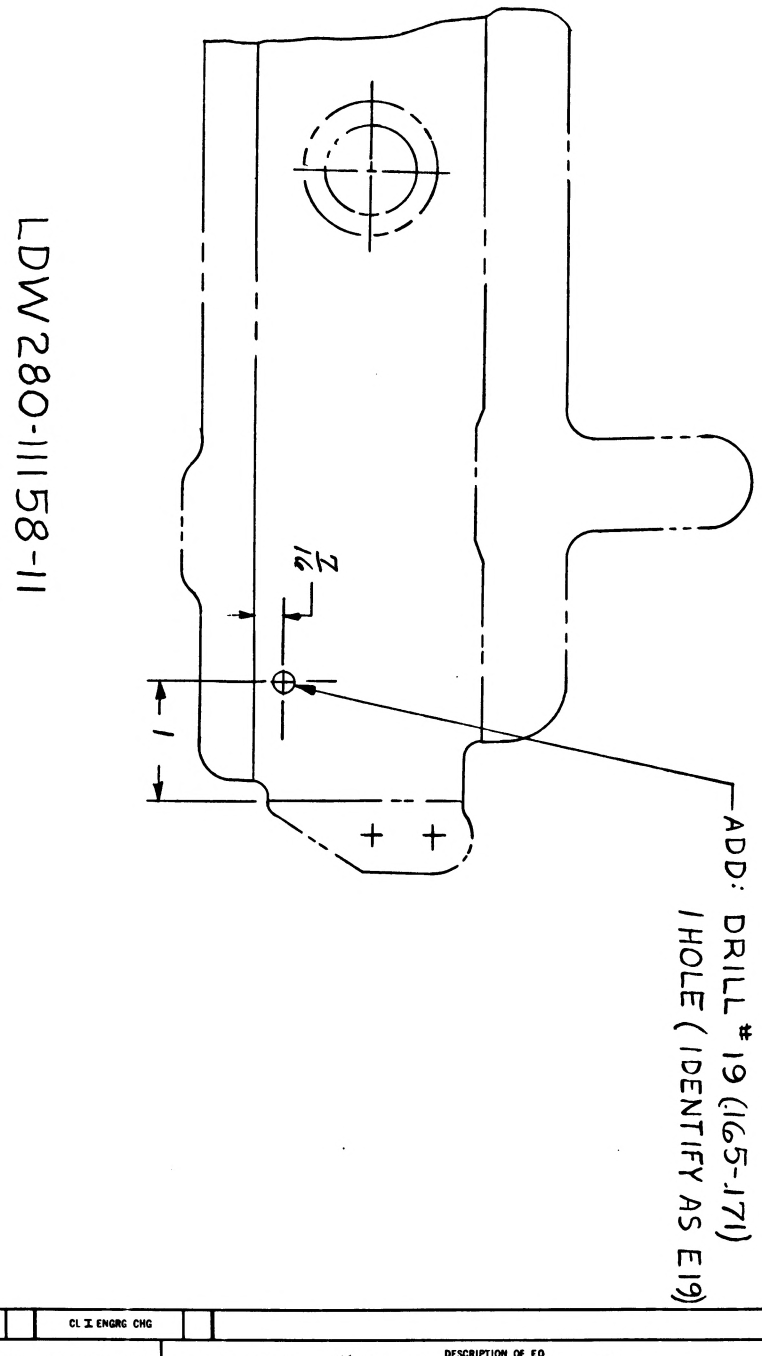
01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11158		EO NO. B2
CONTROL INFO NO. LDW280A-3031		



DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		3

REASON FOR EO: PROVIDE CLAMPING POINT FOR RCS MOD WIRING

DESCRIPTION OF EO: ADDED #19 HOLE ON -11

GAEC C EO RELEASE: FK 11/10/6

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LTA-8(18)	LM-1(31)	
		THRU	
		LM-15(45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY	WT ALW			SHG	a4		RMC(E)	
✓		✓		DATE	10/29			10/9/66	10/29/66		11-2	11-9-66
REVISE DWG	RECORD EO	REWORK	SCRAP	5	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	ZEE ASCENT STAGE MID-SECT SHIELD SUPPORT +X25 3.5 DECK	LDW 280-11158	B2

ISSUED BY R M NORTON (6655) SECTION EQUIP LINES GROUP NO. 332 PL 5

01 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

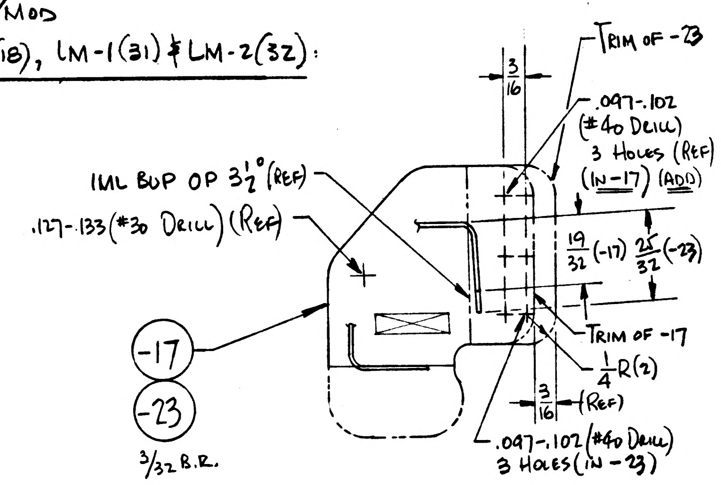
ENGINEERING ORDER

DWG. NO. LDW 280-11158		EO NO. B3
CONTROL INFO NO. LDW 280A-3536		

CREATE -23 IDENTICAL TO -17 (EXCEPT AS SHOWN) FOR LM-3(33) THRU LM-15(45) EFF'Y

N/A LDW 280-53476 1 REQ'D/MOD

RESTRICT EFFECTIVITY OF -17 TO LTA-8(18), LM-1(31) & LM-2(32):



TRIM OF -23
3/16
.097-.102 (#40 DRILL) 3 HOLES (REF) (IN -17) (ADD)
IML BUP OP 3½° (REF)
.127-.133 (#30 DRILL) (REF)
19/32 (-17) 25/32 (-23)
TRIM OF -17
1/4 R(2)
3/16 (REF)
.097-.102 (#40 DRILL) 3 HOLES (IN -23)
-17
-23
3/32 B.R.

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		3

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
STRESS REQUIREMENT (TO OBTAIN GREATER EDGE DISTANCE FOR RIVET IN FIBERGLASS)	CREATED -23 EFFECTIVITY OF -17 WAS LTA-8(18), LM-1(31) THRU LM-15(45)	9 C FE 12/3/6

MODEL	EFFECTIVITY		
	~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	~~SUB CONTR UNIT NO.~~
LM	LM-3(33)	THRU LM-15(45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
✓			✓	DATE	11/21/66			—	11-28		12-1-66	12-2-66
REVISE DWG	RECORD EO	REWORK	SCRAP	5	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	ZEE - ASCENT STAGE, MID SECTION, SHIELD SUPPORT, +X 253.5 DECK	LDW 280-11158	B3

ISSUED BY GEO. W. ROCKLEIN X1441 11/18/66 SECTION VEH. DES. INT. GROUP NO. 335 PL 35

01 NAS 9-1100

C

ENG 32.1 REV 3-65

FITH

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW 280-11158
EO NO. B4
CONTROL INFO NO. LDW 280A-6960

FOR -21:

REMOVE EFFECTIVITY LM-3(33) THRU LM-15(45)

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG	LCD# 1244

REASON FOR EO: INCREASED FITH LOADS

DESCRIPTION OF EO: DELETED -21

GAEC EO RELEASE: C JK 5/20/67

MODEL	~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	~~SUB CONTR UNIT NO.~~
LM	LM-3 (33)	THRU LM-15 (45)	

DRAWING CHANGE REQ'D		DISPOSITION OF PARTS		APPROVED BY	JAP			JDL	HHC		JWB	
✓			-21	DATE	5/18/67			5/18/67	5/19/67		5/19/67	5/19/67
REVISE DWG	RECORD EO	REWORK	SCRAP	5	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONT~~

PRIORITY: C

DRAWING TITLE: ZEE - ASCENT STAGE, MID SECTION, SHIELD SUPPORT, +X 253.5 DECK

DRAWING NO. LDW 280-11158

EO NO. B4

ISSUED BY Geo. W. Rocklein x7033 5/17/67 SECTION Veh. Des. Int. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11159 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53476	LM-6(36)	1EA
↕	↕	LM-5(35)	1EA
		LM-4(34)	1EA
	LDW280-53476	LM-3(33)	1EA
	LDW280-28476	LM-2(32)	1EA
	LDW280-28476	LM-1(31)	1EA
LM	LDW280-28476	LTA-8(18)	1EA

PART NO. LDW280-11159-17&-19

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53476	LM-6 (36)	2
↕	↕	LM-5(35)	2
		LM-4(34)	2
	LDW280-53476	LM-3(33)	2
	LDW280-28476	LM-2(32)	2
	LDW280-28476	LM-1(31)	2
LM	LDW280-28476	LTA-8(18)	2

PART NO. LDW280-11159-18 — GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53476	LM-6(36)	3
↕	↕	LM-5(35)	3
		LM-4 (34)	3
	LDW280-53476	LM-3 (33)	3
	LDW280-28476	LM-2(32)	4
	LDW280-28476	LM-1(31)	4
LM	LDW280-28476	LTA-8 (18)	4

PART NO. LDW280-11159-15 — GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28476	LM-2(32)	1EA
LM	LDW280-28476	LM-1 (31)	1EA
LM	LDW280-28476	LTA-8(18)	1EA

PART NO. LDW280-11159-11,-13 — GAEC SCH NO. 32

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED —

LAST DASH NO. USED -19

GRUMMAN REL INFO A

PRIM NO. 215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ± .020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM #1

DOCUMENTATION TYPE II

DRAWN BY	ROCKLEIN 5-2
LAYOUT BY	ROCKLEIN 5-2
CHECKED BY	
GR. LEADER	PHILLIPS 5-3
VEH DES INT	BISCHOFF 5-4
STRUCTURE	F. BUNCE 5-13
STRUCTURE	HILDERMAN 5-14
WEIGHTS	ROBESCH 5-17
RELIABILITY	
PROJ ENGR	J. ALBER 5-18-66
REL GROUP	CARAMANICA 5-19-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ZEE
ASCENT STAGE, MIDSECTION
SHIELD SUPPORT, +X 253.5 DECK

SIZE B — CODE IDENT NO. 26512 — LDW280-11159 A

SCALE NONE — SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11159 NO CHG 5-19-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHG LAST REV. NO CHG, LOFTED DWG WAS DIM'S DWG, ADDED SH. 1.10, 2.00 & 3.00 S. AUGELLO 10-25-66	NOT	RE	QD			
A	1	1.00, 1.10 2.00 & 3.00						EO A1	ON LDW280-11159-13 CHANNEL, ADDED 4 HOLES (.165-.171) (DRILL #19)	LTA-8 LM-1 & -2	✓		AUGELLO 10-26-66		☒

CHG APPROVED						
LTR	GROUP LDR	VEH DES INT	STRUCTURE	STRUCTURE	WEIGHTS	RELIABILITY
A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11159	A
SCALE NONE		SHEET 1.10	

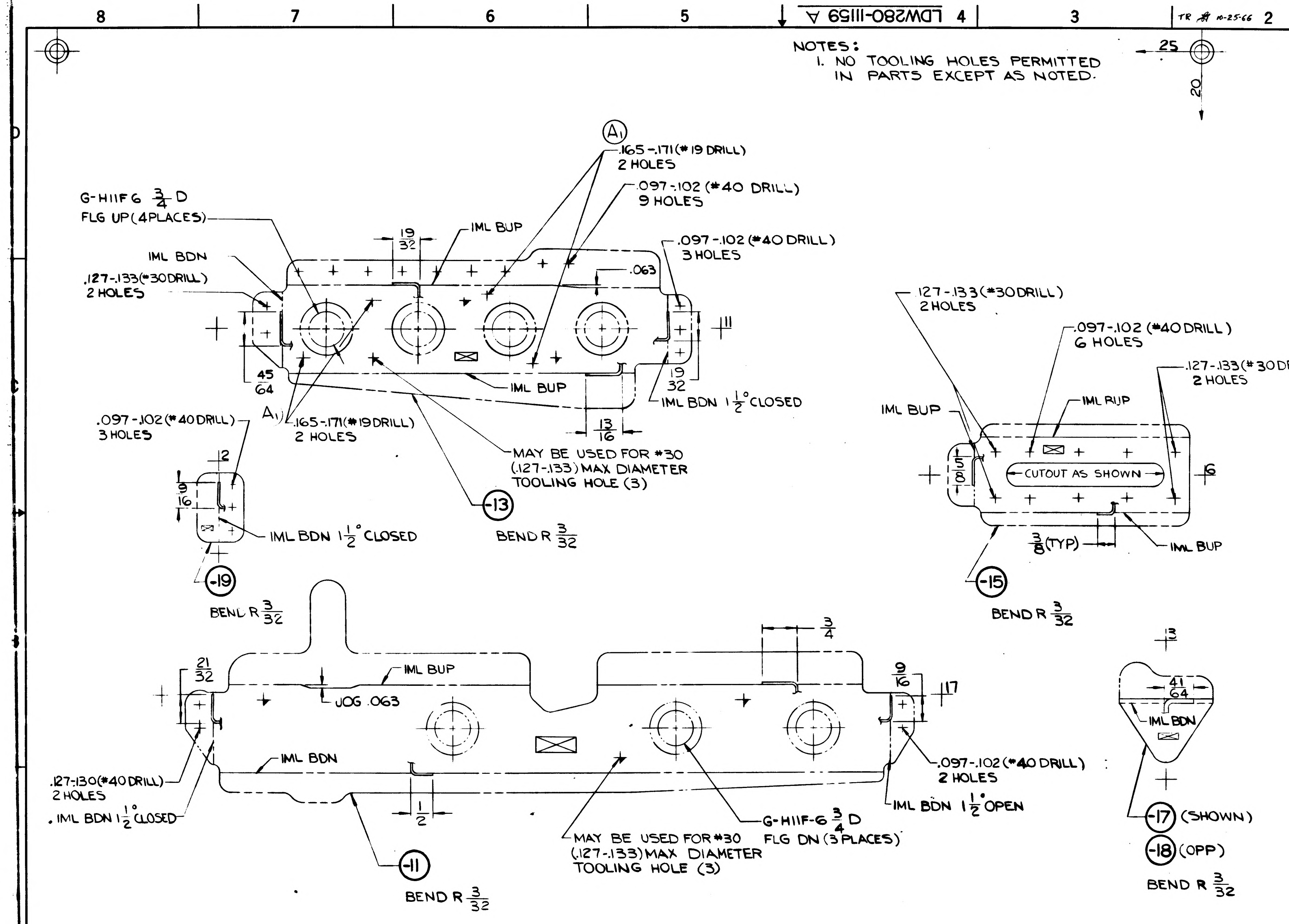
ENG 77.16 3-66

01 NAS 9-1100

LDW280-11159 A

TR # 11-25-66

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS EXCEPT AS NOTED.



25
20
(A1)
.165-.171(#19 DRILL)
2 HOLES
.097-.102 (#40 DRILL)
9 HOLES
G-H11F6 3/4 D
FLG UP (4 PLACES)
19/32
IML BUP
.097-.102 (#40 DRILL)
3 HOLES
IML BDN
.127-.133(#30 DRILL)
2 HOLES
.063
11
45/64
19/32
IML BUP
IML BDN 1 1/2° CLOSED
A1
.165-.171(#19 DRILL)
2 HOLES
13/16
.097-.102(#40 DRILL)
3 HOLES
MAY BE USED FOR #30
(.127-.133) MAX DIAMETER
TOOLING HOLE (3)
-13
BEND R 3/32
12
9/16
IML BDN 1 1/2° CLOSED
-19
BEND R 3/32
.127-.133(#30 DRILL)
2 HOLES
.097-.102 (#40 DRILL)
6 HOLES
.127-.133(#30 DRILL)
2 HOLES
IML BUP
IML BUP
1 5/8
CUTOUT AS SHOWN
6
3/8 (TYP)
IML BUP
-15
BEND R 3/32
3/4
21/32
IML BUP
JOG .063
9/16
17
.127-.130(#40 DRILL)
2 HOLES
IML BDN
.097-.102 (#40 DRILL)
2 HOLES
IML BDN 1 1/2° OPEN
IML BDN 1 1/2° CLOSED
1/2
-11
BEND R 3/32
MAY BE USED FOR #30
(.127-.133) MAX DIAMETER
TOOLING HOLE (3)
G-H11F-6 3/4 D
FLG DN (3 PLACES)
13
41/64
IML BDN
-17 (SHOWN)
-18 (OPP)
BEND R 3/32

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LM	SIZE D	CODE IDENT NO. 26512	LDW280-11159	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

LDW280-11159 A

FOR PHOTO REPRODUCTION

K2

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11159-19	E	CLIP	AL ALLOY SH	QQ-A-250/12	7075	.040 X 1¼ X 1⅝	T6	88	
		-18		CLIP		QQ-A-250/4	2024	.090 X 2$\frac{3}{16}$ X 2½	T42	88	
		-17		CLIP		QQ-A-250/4	2024	.090 X 2$\frac{3}{16}$ X 2½	T42	88	
		-15		CLIP		QQ-A-250/12	7075	.045 X 2⅝ X 5½	T6	88	
		-13		CHANNEL		QQ-A-250/12	7075	.040 X 3¾ X 10	T6	88	
		LDW280-11159-11	E	ZEE	AL ALLOY SH.	QQ-A-250/12	7075	.040 X 5 X 16½	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						T42	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11159

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

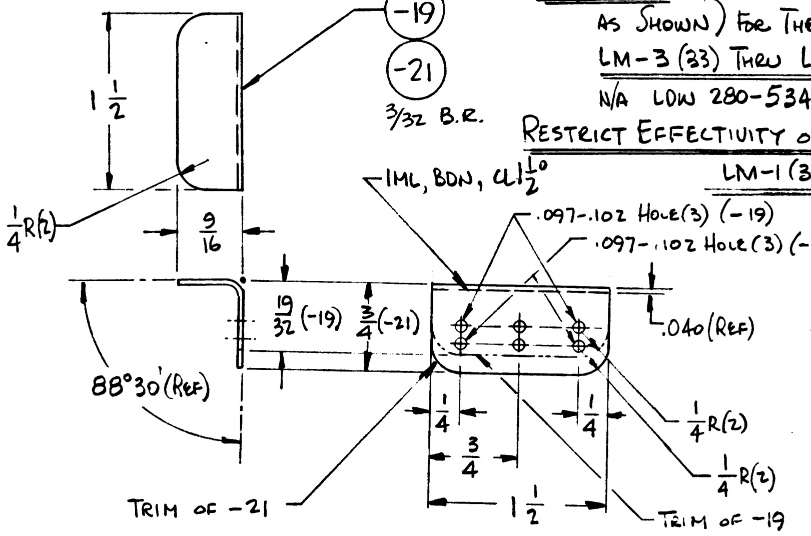
ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW 280-11159		EO NO. B1
CONTROL INFO NO. LDW 280A - 3520		



-19
-21
3/32 B.R.
1 1/2
1/4 R(2)
9/16
-IML, BDN, CL 1 1/2 0
.097-.102 HOLE(3) (-19)
.097-.102 HOLE(3) (-21)
19/32 (-19) 3/4 (-21)
.040 (REF)
88°30' (REF)
1/4
1/4
3/4
1/4 R(2)
1/4 R(2)
1 1/2
TRIM OF -21
TRIM OF -19

CREATE -21 IDENTICAL TO -19 (EXCEPT AS SHOWN) FOR THE FOLLOWING EFF: LM-3 (33) THRU LM-15(45)

N/A LDW 280-53476 1 REQ'D/MOD

RESTRICT EFFECTIVITY OF -19 TO LTA-8(18), LM-1 (31) AND LM-2 (32)

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		3

REASON FOR EO	DESCRIPTION OF EO	GAEC C EO RELEASE
STRESS REQUIREMENT (TO OBTAIN GREATER EDGE DISTANCE FOR RIVET IN FIBERGLASS)	CREATED -21 EFFECTIVITY OF -19 WAS LTA-8(18), LM-1 (31) THRU LM-15 (45)	FR 12/3/6

MODEL	EFFECTIVITY ~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	~~SUB CONTR UNIT NO.~~
LM	LM-3(13)	THRU LM-15(45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY	RP			—				
✓		.	✓	DATE	11/21/66			—	11-28		12-1-66	12/2/66
REVISE DWG	RECORD EO	REWORK	SCRAP	5	V.D.I	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	ZEE - ASCENT STAGE, MID SECTION, SHIELD SUPPORT, X253.5 DECK	LDW 280-11159	B1

ISSUED BY GEO. W. ROCKLEIN X1441 11/17/66 SECTION VEH. DES. INT. GROUP NO. 335 PL 35

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 526
CONTROL INFO NO. LDW280 A5914

TO THE FOLLOWING DRAWINGS LISTED BELOW & THEIR DASH NUMBERS * THAT ARE EFFECTIVE ON LM-6(36) ADD EFFECTIVITIES FOR LM-7(37) LM-8(38), LM-9(39), LM-10(40), LM-11(41), LM-12(42), LM-13(43), LM-14(44), LM-15(45). QUANTITIES & N/A REMAIN THE SAME AS LM-6(36.)

DRAWING No.	DASH No.*	CHG. NO.	TITLE	NEXT ASSY
LDW280-10245	-17, -19	C4	ANGLE CAB. L.H WIND	LDW280-23074
-10261	-13,-15,-17,-19,-20	C1	CHAN. M/S BEAM	-54030
-10300	-13, -15	D2	CLIP RH ZO FRM LWR	-54020
-10310	-15	D1	CHAN CAB. WIND AREA	-23074
-10380	-15	C1	SHIM FWD HATCH HINGE	-54083
-10561	-11	A1	WEB M/S ENG SPT. FWD	-23077
-10702	-17	A1	DBLR DOCK TUN.	-23069
-10830	ULTRA SONIC STD. PANELS	B1	FAB. PROC.-RCS-HE MOD	H23143
-10833	-11, -13, -15	B2	WEB ECS HEAT EXC SPT	-23253
-10904	-11, -13, -17	C3	SUPT IMU BEAM WIRING	-23031
-23168	-1, -3, -5 & -7	A2	HATCH ASSY DOCK TUNNEL	-23069
M-23139	-1	B1	VEE ASSY CAB UVP-LAP	-23066
-11066	-11, -12	A1	CLIP S BAND ANTENNA	-23246
-11110	-11	C1	FTG AEB CAGE STRUT	-23039
-11117	-17, -19	B1	CHANNEL X253 DECK	-23029
-11117	-11, -13 & -15		CHANNEL X253 DECK	-53476
-11159	-15, -17, -18	B2	ZEE SHIELD X253.5	-53476
-11191	-11	C1	SUPT F.F. EQUIP LINES	-54075
-11351	-1 & -3	B2	BRACKET ASSY	-23488
-53078	-1	A7	BEAM INSTL MS 210.25	-54012
H23903	-5	C4	SKIRT ASSY OXID	LDW280-23901
M10555	-1, -2	A1	CLIP LONGERON CABIN	-23048
-28753	-1	A4	SKIN ASSY DS SC	-28750
-23066	-1	B4	FR IN CAB NA BAS SUP	-54002
-23511	NONE	B3	JIG DATA - REF DWG.	NONE
M11108	-1	B1	BOLT ZO R.H SHIELD SUP	-51199
-25709	-1	A2	SHIELD INSTL DS EC	-25661
-28362	-3	A2	STRAP ASSY CABIN	-54357
-28645	-3	A2	ACCESS COV INST PLSS	-54553

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LM-7(37) THRU LM-15(45) EFF.

Ⓡ GAEC EO RELEASE: 3 C JK 3/27/7

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-7(37) THRU	LM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK NOT REQD SCRAP

	APPROVED BY	DATE
	Jaf	3/16/67
6	VDI	
SUPPORT		
RELIAB. GROUP		
GROUP LEADER	—	—
STRESS GROUP	MJK	3/20
LIAISON ENGRG		
PROJ ENGRG		3.23.67
	JKP	3/24/67

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LEO 280
EO NO.: 526

ISSUED BY A. MAICA X1392 SECTION VEH. DES. INTRE GROUP NO. 535 PL 35

01

NAS 9-1100

B

ENG 32.1 REV 3-65

FITH

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW 280-11159 | EO NO. B3
CONTROL INFO NO. LDW 280A-6961

FOR -15:
QUANTITY REQUIRED FOR LM-3(33) THRU LM-15(45) IS 2 PER MODULE (WAS 3)

FOR -18:
QUANTITY REQUIRED FOR LM-3(33) THRU LM-15(45) IS 1 PER MODULE (WAS 2)

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐	LCD# 1244	3

REASON FOR EO: INCREASED FITH LOADS

DESCRIPTION OF EO: FOR LM-3(33) THRU LM-15(45) EFFECTIVITY: -15 QUANTITY 2/MOD (WAS 3); -18 QUANTITY 1/MOD (WAS 2)

GAEC EO RELEASE: C
JK 5/22/67

MODEL	EFFECTIVITY		
	~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	~~[illegible] UNIT NO.~~
LM	LM-3 (33)	THRU LM-15	(45)

DRAWING CHANGE REQD		DISPOSITION OF PARTS										
				APPROVED BY				Z.D.R.	JY			
✓			✓	DATE	5/18/67			5/18/67	5/19/67		5/18/67	5/19/67
REVISE DWG	RECORD EO	REWORK	SCRAP	5	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	ZEE-ASCENT STAGE, MID SECTION, SHIELD SUPPORT, +X 253.5 DECK	LDW 280-11159	B3

ISSUED BY Geo. W. Rocklein x7033 5/17/67
SECTION Veh. Des. Int.
GROUP NO. 335
PL 25

01

NAS 9-1100

LDW280-11160 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53476	LM-15(45)	1 EA
		LM-14(44)	
		LM-13(43)	
		LM-12(42)	
		LM-11(41)	
		LM-10(40)	
		LM-9(39)	
		LM-8(38)	
		LM-7(37)	
		LM-6(36)	
		LM-5(35)	
		LM-4(34)	
	LDW 280-53476	LM-3(33)	
	LDW 280-28476	LM-2(32)	
	LDW 280-28476	LM-1(31)	
LM	LDW280-28476	LTA-8(18)	1 EA

PART No. LDW280-11160-17,-19,-20 32-2

LM	LDW280-23029	LM-15(45)	2 EA
LM	LDW280-23029	LM-14(44)	2 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM

PART NO. LDW280-11160-13,-14 CONTINUED

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23029	LM-13(43)	2 EA
		LM-12(42)	
		LM-11(41)	
		LM-10(40)	
		LM-9(39)	
		LM-8(38)	
		LM-7(37)	
		LM-6(36)	
		LM-5(35)	
		LM-4(34)	
	LDW280-23029	LM-3(33)	
	LDW 280-28029	LM-2(32)	
	LDW 280-28029	LM-1(31)	
	LDW 280-23029	LTA-3(13)	
LM	LDW280-28029	LTA-8(18)	2 EA

GAEC SCH NO.

PART NO. LDW280-11160-13,-14

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23029	LM-15(45)	1 EA
		LM-14(44)	
		LM-13(43)	
		LM-12(42)	
		LM-11(41)	
		LM-10(40)	
		LM-9(39)	
		LM-8(38)	
		LM-7(37)	
		LM-6(36)	
		LM-5(35)	
		LM-4(34)	
	LDW 280-23029	LM-3(33)	
	LDW 280-28029	LM-2(32)	
	LDW 280-28029	LM-1(31)	
	LDW 280-23029	LTA-3(13)	
LM	LDW280-28029	LTA-8(18)	1 EA

GAEC SCH NO. 32-5

PART NO. LDW280-11160-11,-15

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10		2.00	3.00				
REV	A	A		A	A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED —

LAST DASH NO. USED -20

GRUMMAN REL INFO

PRIM NO. 215 LAN

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM #1

DOCUMENTATION TYPE II

DRAWN BY	ROCKLEIN 4-29-66		
LAYOUT BY	ROCKLEIN 4-28-66		
CHECKED BY			
GR.LEADER	R.PHILIPS 5-2-66		
VEH.DES.INT	W.BISCHOFF 5-3-66		
STRUCTURES	B.WHITMAN 5-5-66	PROJ ENGR	J.ALBER 5-9-66
STRUCTURES	R.HILDERMAN 5-5-66	REL GROUP	C.BOTTI 5-11-66
WEIGHTS	D.ROBESCH 5/6-66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP
ASCENT STAGE-MIDSECTION, SHIELD SUPPORT; +X 253.5 DECK

SIZE B

CODE IDENT NO. 26512

LDW280-11160 A

SCALE NONE

SHEET 1.00 OF 3

ENG 77.1 12-65

SUPERSEDES LDW280-11160. NO CHG. 5-11-66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHG LAST REV. NO CHG, LOFTED DWG WAS DIM. DWG, ADDED SH. 1.10, 2.00 & 3.00 T. MAYBO 10-28-66	NOT	RE	QD			
A	1	1.00, 1.10						LEO 280-296 ①	FOR -11, -13, -14, -15, -17, -19 & -20 ADDED LM-7 THRU LM-15 EFF.	LM-7 THRU LM-15	NOT	REQD	MAYBO 10-28-66		

CHG APPROV'D

LTR	GROUP LDR	VEH. DES. INT.	STRUCTURE	STRUCTURE	WEIGHTS	RELIABILITY					
A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11160	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11160-20	E	CLIP	AL ALLOY SH	QQ-A-250/12	7075	.056 x 3 x 3	T6	88	
								-19		CLIP			7075	.056 x 3 x 3	T6		
								-17		STRAP			7075-T6	.063 x 5 x 2	NONE		
								-15		CLIP			7075	.080 x 4 x 3	T6		
								-14		CLIP			7075	.080 x 5 x 4	T6		
								-13		CLIP			7075	.080 x 5 x 4	T6		
								LDW280-11160-11	E	CLIP	AL ALLOY SH	QQ-A-250/12	7075	.080 x 5 x 4	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP 14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

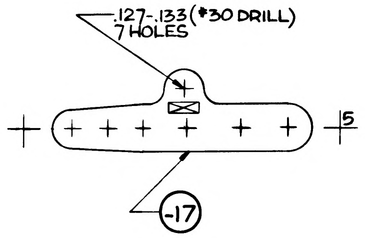
SIZE	CODE IDENT NO.		
B	26512	LDW280-11160	A

SCALE NONE SHEET 2.00

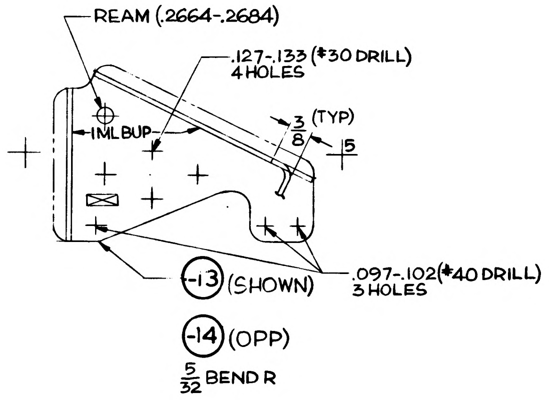
01

NAS 9-1100

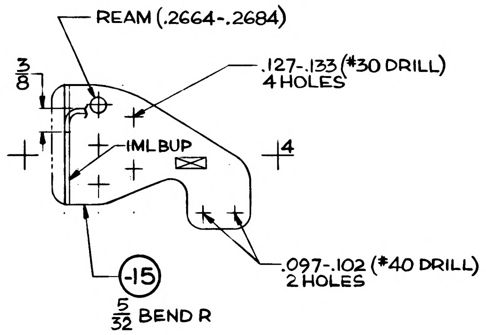
TR # 10-31-66



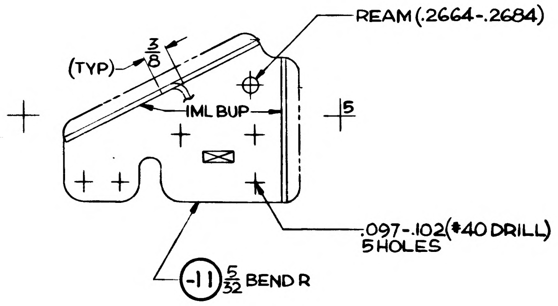
.127-.133 (#30 DRILL)
7 HOLES
5
-17



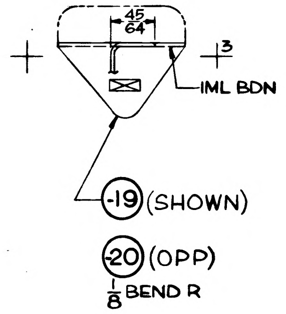
REAM (.2664-.2684)
.127-.133 (#30 DRILL)
4 HOLES
IML BUP
3/8 (TYP)
5
.097-.102 (#40 DRILL)
3 HOLES
-13 (SHOWN)
-14 (OPP)
5/32 BEND R



REAM (.2664-.2684)
3/8
.127-.133 (#30 DRILL)
4 HOLES
IML BUP
4
.097-.102 (#40 DRILL)
2 HOLES
-15
5/32 BEND R



REAM (.2664-.2684)
(TYP) 3/8
IML BUP
5
.097-.102 (#40 DRILL)
5 HOLES
-11 5/32 BEND R



45/64
3
IML BDN
-19 (SHOWN)
-20 (OPP)
1/8 BEND R

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-11160A

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LM	SIZE F	CODE IDENT NO. 26512	LDW280-11160	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION K3

01 NAS 9-1100

MANUFACTURING OPERATIONS

NOTES CHECKED - APPLY TO THIS DWG.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.

REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.

125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.

200√ FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.

FILLET AND INSIDE CORNER RADII TOLERANCES
.016R TO .062R ± .010
.063R TO .250R ± .015
OVER .250R ± .030

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.

MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

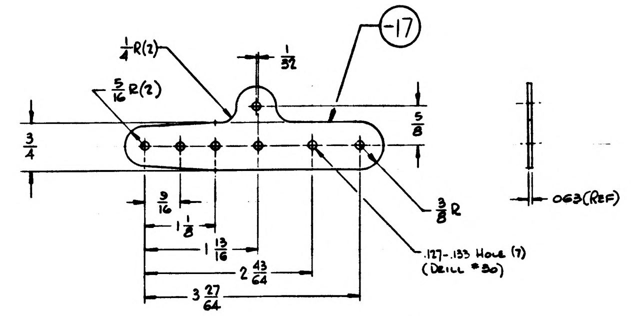
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS

SYMBOL ʃ DENOTES SURFACE TO BE MACHINED

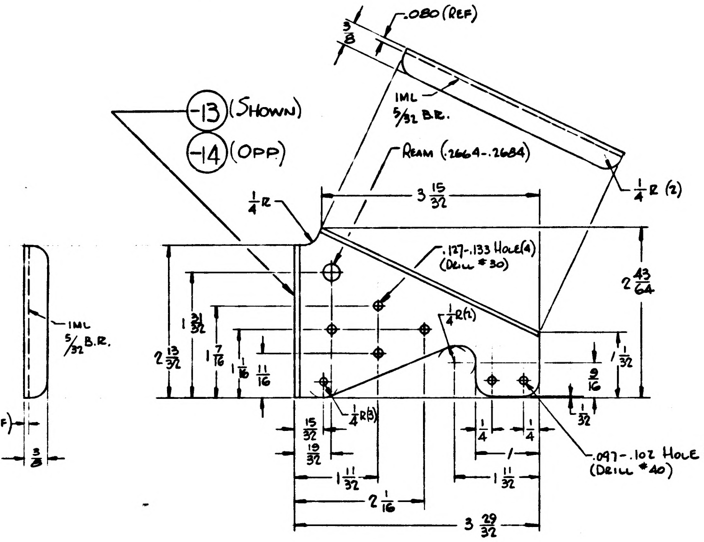
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

REVISIONS

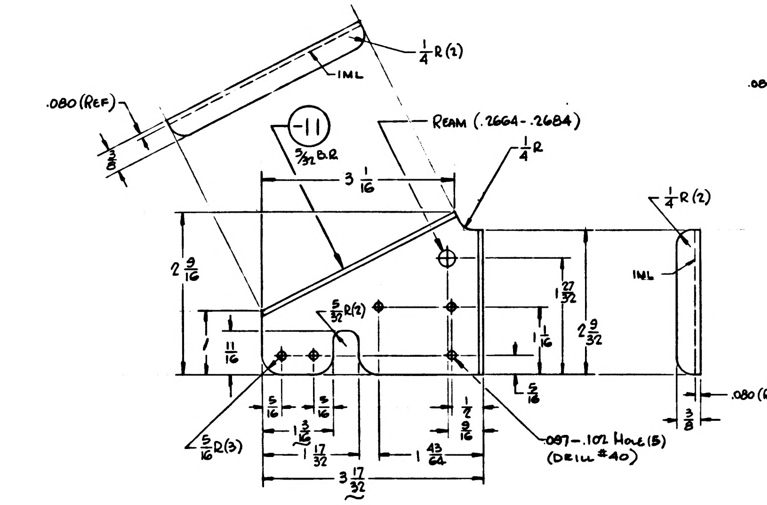
REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY – DCRF OR ECP	CLASS II	CLASS I	ENGRG ORDER	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MODULE NUMBER	DISPOSITION OF EXIST PARTS: RE-WORK	SCRAP	ENGRG APPD	GOVT APPD



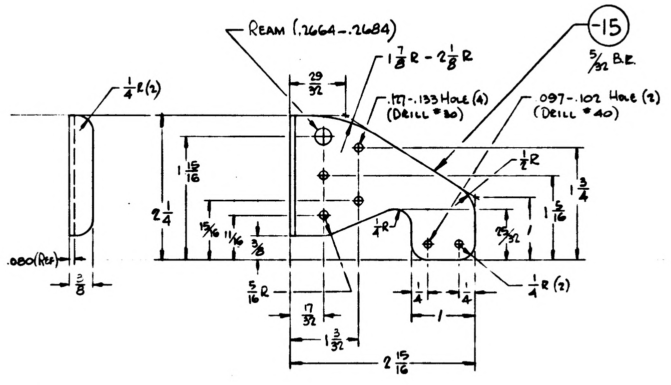
-17
1/4 R(2)
5/16 R(2)
1/32
5/8
3/4
3/8 R
.063(REF)
3/16
1 1/8
1 13/16
2 43/64
3 27/64
.127-.133 HOLE (7) (DRILL #30)



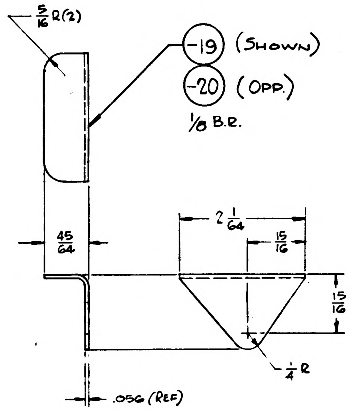
-13 (SHOWN)
-14 (OPP)
3/8
.080(REF)
IML
5/32 B.R.
REAM (.2664-.2684)
1/4 R
3 15/32
1/4 R (2)
.127-.133 HOLE (4) (DRILL #30)
2 43/64
1/4 R(2)
2 3/32
1 31/32
1 7/16
1 11/16
1 1/32
9/16
1/32
15/32
19/32
1/4 R(3)
1/4
1
1/4
1 11/32
1 11/32
2 1/16
3 29/32
.097-.102 HOLE (2) (DRILL #40)
.080(REF)
3/8



-11
1/4 R (2)
IML
.080(REF)
3/8
5/32 B.R.
REAM (.2664-.2684)
1/4 R
3 1/16
1/4 R (2)
IML
2 9/16
5/32 R(2)
1 27/32
2 9/32
1 1/16
11/16
1
5/16 R(3)
3/16
1
3/8
1 17/32
1 43/64
3 17/32
5/8
.097-.102 HOLE (5) (DRILL #40)
.080 (REF)
3/8



-15
5/32 B.R.
REAM (.2664-.2684)
1 1/8 R - 2 1/8 R
29/32
.127-.133 HOLE (4) (DRILL #30)
.097-.102 HOLE (2) (DRILL #40)
1/4 R(2)
1 15/16
2 1/4
1/2 R
1 3/4
1 5/16
15/16
11/16
3/8
25/32
1/4 R(2)
1/4
1/4
.080(REF)
3/8
5/16 R
17/32
1 3/32
2 15/16



-19 (SHOWN)
-20 (OPP)
1/8 B.R.
5/16 R(2)
2 1/64
15/16
45/64
15/16
1/4 R
.056 (REF)

"TO BE REDRAWN ON PRODUCTION FORMAT"

NAS 9-1100

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	LSP-14-9030	

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
T6	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

ENG. 000 5-63

QTY REQ'D PER ASSY			PART OR IDENTIFYING NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE
			LDW 280-11160-20	E		CLIP	AL ALLOY SH	QQ-A-283	7075	.056 × 2 × 2 1/8	T6	88		
			LDW 280-11160-19			CLIP			7075	.056 × 2 × 2 1/8	T6	88		
			LDW 280-11160-17			STRAP			7075-T6	.063 × 1 3/8 × 4 1/4	NONE	88		
			LDW 280-11160-15			CLIP			7075	.080 × 2 1/2 × 3 1/2	T6	88		
			LDW 280-11160-14			CLIP			7075	.080 × 3 1/8 × 4 1/2	T6	88		
			LDW 280-11160-13			CLIP			7075	.080 × 3 1/8 × 4 1/2	T6	88		
			LDW 280-11160-11	E		CLIP	AL ALLOY SH	QQ-A-283	7075	.080 × 3 × 4 1/4	T6	88		

3

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE	MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE	MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
				LEM	LDW 280-23029	LEM-6 (36)	2	LEM	LDW 280-23029	LEM-6 (36)	1
LEM	LDW 280-53476	LEM-6 (36)	1	LEM	LDW 280-23029	LEM-5 (35)	2	LEM	LDW 280-23029	LEM-5 (35)	1
LEM	LDW 280-53476	LEM-5 (35)	1	LEM	LDW 280-23029	LEM-4 (34)	2	LEM	LDW 280-23029	LEM-4 (34)	1
LEM	LDW 280-53476	LEM-4 (34)	1	LEM	LDW 280-23029	LEM-3 (33)	2	LEM	LDW 280-23029	LEM-3 (33)	1
LEM	LDW 280-53476	LEM-3 (33)	1	LEM	LDW 280-23029	LTA-3 (13)	2	LEM	LDW 280-23029	LTA-3 (13)	1
LEM	LDW 280-28476	LEM-2 (32)	1	LEM	LDW 280-28029	LEM-2 (32)	2	LEM	LDW 280-28029	LEM-2 (32)	1
LEM	LDW 280-28476	LTA-8 (18), LEM-1 (31)	1	LEM	LDW 280-28029	LTA-8 (18), LEM-1 (31)	2	LEM	LDW 280-28029	LTA-8 (18), LEM-1 (31)	1
PART NO.	LDW 280-11160-17,-19,-20	GRUMMAN SCH INFO 32-5		PART NO.	DW 280-11160-13,-14	GRUMMAN SCH INFO 32-2		PART NO.	LDW 280-11160-11,-15	GRUMMAN SCH INFO 32-2	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ± .020 ± 0°30'

ORIG DWG AUTH		
DETAIL SPEC REQUIREMENT		
CLASS II ENGRG CHANGE		
CLASS I ENGRG CHANGE		
GRUMMAN REL INFO		
PRIM. NO. 215	HE(001) MP17	5-5

DRAWN BY	ROCKLEIN	4-23
CHECKED BY		
LAYOUT BY	ROCKLEIN	4-28
GROUP LDR		5/26
VEH. DES. INT.		23
STRUCTURES		
STRUCTURES		5/5
WEIGHTS		56
RELIABILITY		
PROJECT ENGR		5-9
RELEASE		5-11-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

CLIP – ASCENT STAGE, MID SECTION, SHIELD SUPPORT, +X253.5 DECK

CONTRACT NO. NAS 9-1100 DOCUMENTATION TYPE II

CODE IDENT NO.	SIZE	
26512	F	LDW 280-11160
SCALE: FULL	LINE ITEM #1	SHEET 1 OF 1

01

NAS 9-1100

24 *

ENG 33.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280
EO NO. 296
CONTROL INFO NO. LDW280 A 0658

*

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
✓ LDW280-10981	A1	SEE DRAWING
✓ -11015	B1	
✓ -11025	B1	
✓ -11028	B4	
✓ -11035	A2	
✓ -11036	B1	
✓ -11039	A1	
-11045	A1	
-11048	B1	
-11050	C1	
P11055	B2	
P11056	C2	
-11067	B1	
-11068	B1	
H11069	B1	
-11070	C1	
-11071	A1	
-11072	A1	
-11073	A2	
P11087	B1	
-11103	A1	
-11116	A1	
-11119	B1	
-11123	A2	
-11128	C1	
-11149	A1	
-11153	A1	
-11154	A2	
-11155	A1	
-11156	B1	
-11157	B2	
LDW280-11160	A1	SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC C EO RELEASE: 10-8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM-8(38)	LEM 9(39)
LEM		LEM-10(40) LEM-11(41)	LEM-12(42)
LEM		LEM-13(43) LEM-14(44)	LEM-15(45)

DRAWING CHANGE REQD: ✓ REVISE DWG ☐ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D REWORK SCRAP

	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY	RP			—			RMS	AC
DATE	9/23/66			—	9.9		10-6-66	10-3-66

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO.: LE0280

EO NO.: 296

ISSUED BY: L. DE TURRIS 7-18-66 X1441 SECTION: VEHICLE DESIGN INT. GROUP NO. 280 PL. 35

LDW280-11161 A

LEM	LDW280-28476	LEM-2(32)	1 EA
LEM	LDW280-28476	LEM-1(31)	1 EA
LEM	LDW280-28476	LTA-8(18)	1 EA
PART NO. LDW280-11161-13,-15,-17		GAEC SCH NO 32-2	REQD PER MODULE

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53476	LEM-6(36)	1
		LEM-5(35)	1
		LEM-4(34)	1
LEM	LDW280-53476	LEM-3(33)	1
PART NO. LDW280-11161-19		GAEC SCH NO. 32-2	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53476	LEM-6(36)	1
	-53476	LEM-5(35)	1
	-53476	LEM-4(34)	1
	-53476	LEM-3(33)	1
	-28476	LEM-2(32)	1
	-28476	LEM-1(31)	1
LEM	LDW280-28476	LTA-8(18)	1
PART NO. LDW280-11161-16		GAEC SCH NO. 32-2	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53476	LEM-6(36)	3
	-53476	LEM-5(35)	3
	-53476	LEM-4(34)	3
	-53476	LEM-3(33)	3
	-28476	LEM-2(32)	4
	-28476	LEM-1(31)	4
LEM	LDW280-28476	LTA-8(18)	4
PART NO. LDW280-11161-11		GAEC SCH NO. 32-2	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO			
		PRIM NO.			
LAST DASH NO. USED	-19	215			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 | LINE ITEM 1 | DOCUMENTATION TYPE II

DRAWN BY	ROCKLEIN 5/3/66		
LAYOUT BY	ROCKLEIN 5/3/66		
CHECKED BY			
GR-LDR.	B.PHILLIPS 5/5/66		
VEH DES INT	W.BISCHOFF 5/5/66		
STRUCTURES	FEB BW 5/13/66	PROJ ENGR	J. ALBER RMC 5/18/66
STRUCTURES	HILDERMAN 5/14/66	REL GROUP	CARAMANICA 5/21/66
WEIGHTS	D.ROBESCH DJL 5/17/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

STRAP
ASCENT STAGE - MID SECTION
SHIELD SUPPORT, +X253.5 DECK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11161	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-11161 'NO CHG' 5/3/66

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED NO CHG LAST REVISION NO CHG. SH I OF 4 WAS I OF I. LOFTED DWG WAS DIMENSIONED.	JAEGGI	8-22-	66			
A	I	3.00						EO AI	IN FIELD, ON -15 & -16, 15/16 WAS 11/16. WCG	NOTED	✓		JAEGGI 9-22-66		

FOR CONTINUATION OF REVISIONS SEE SHEET ________

ENG 77.3 5-66

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11161	A
SCALE NONE			SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11161-19	E	CLIP	AL ALLOY SH	QQ-A-250/12	7075	.040x1 7/8 x2 1/4	T6	88	
		-17		CLIP		QQ-A-250/12	7075	.056x2 5/8x2 7/8	T6		
		-16		CLIP		QQ-A-250/4	2024	.100x2 3/4x3	T42		
		-15		CLIP		QQ-A-250/4	2024	.100x2 3/4x3	T42		
		-13		STRAP		QQ-A-250/12	7075-T6	.063x2 1/8x5	NONE		
		LDW280-11161-11	E	STRAP	AL ALLOY SH	QQ-A-250/12	7075-T6	.063x1 1/2x5	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	AL HEAT TREAT	MIL-H-6088
T42	AL HEAT TREAT	MIL-H-6088
88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11161	A

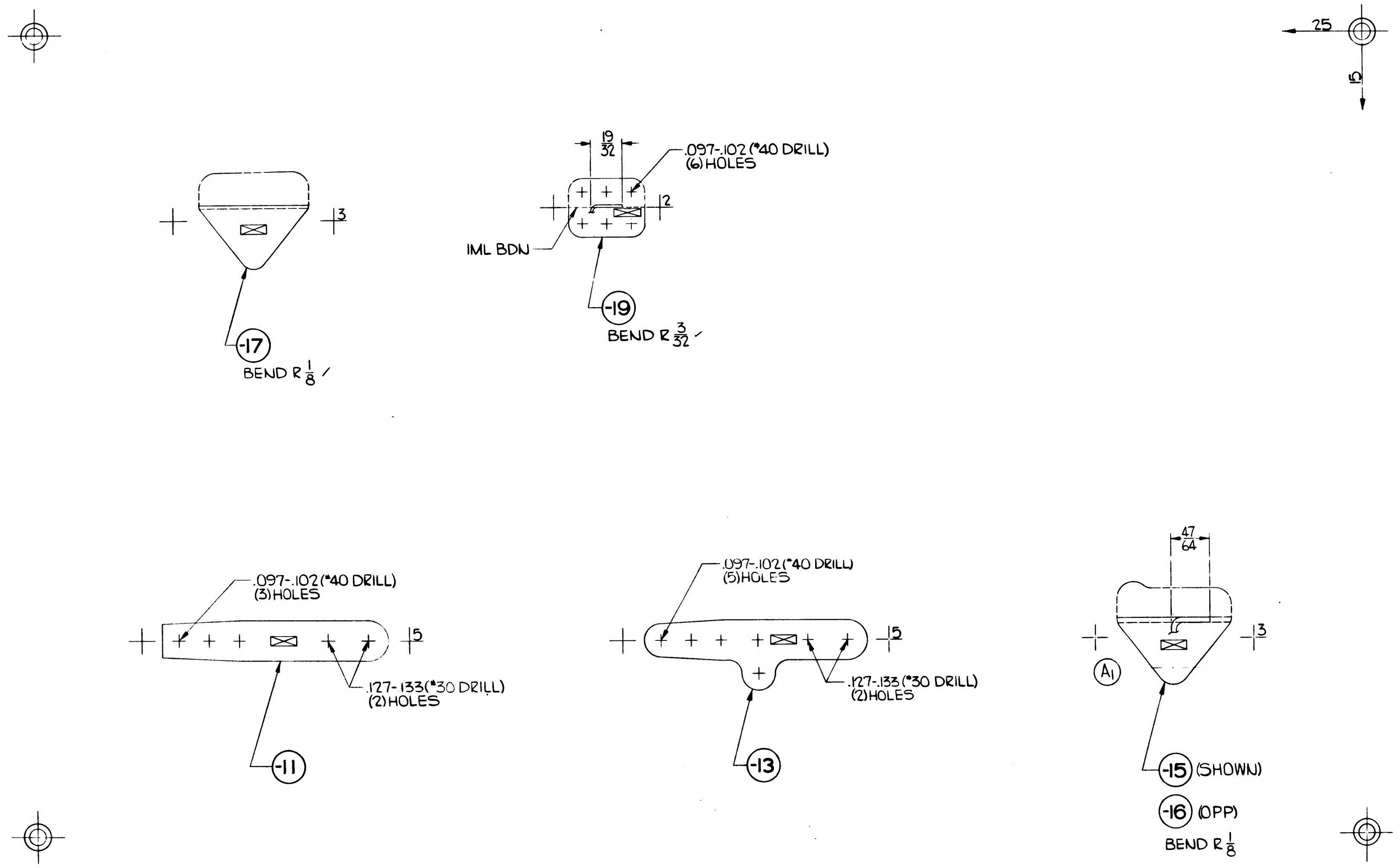
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



25
15
3
19/32
.097-.102 (#40 DRILL) (6) HOLES
12
IML BDN
-19
BEND R 3/32
-17
BEND R 1/8
.097-.102 (#40 DRILL) (3) HOLES
15
.127-.133 (#30 DRILL) (2) HOLES
-11
.097-.102 (#40 DRILL) (5) HOLES
15
.127-.133 (#30 DRILL) (2) HOLES
-13
47/64
3
A1
-15 (SHOWN)
-16 (OPP)
BEND R 1/8

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
	SIZE D	CODE IDENT NO. 26512	LDW280-11161	R A
LEM MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

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01 NAS 9-1100

25

ENG 30.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280		EO NO. 297	
CONTROL INFO NO. LDW280	A 0659		

*

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-11161	B1	SEE DRAWING
-11163	A1	
P 11168	B1	
-11169	A1	
-11170	A1	
-11178	A1	
P 11180	B1	
-11181	B1	
-11182	A1	
-11183	A1	
-11192	B1	
-11204	A1	
-11280	A2	
-11284	B1	
-11294	A5	
-11296	B2	
-11297	B1	
-11300	B1	
-11301	B1	
-11305	B1	
-11316	A1	
-11320	B1	
-11322	A1	
-11337	B1	
LDW280-11374	A3	
~~LDW280~~		SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ		CL III ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: ADDITIONAL REQUIREMENTS	DESCRIPTION OF EO: FOR DASH * ADDED LEM 7 THRU LEM-15 EFF.	GAEC EO RELEASE: FK 10/17/66

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM	8(38) LEM-9(39)
LEM		LEM-10(40) LEM-11	(41) LEM-12 (42)
LEM		LEM-13(43) LEM	14(44) LEM-15(45)

DRAWING CHANGE REQU: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	EDMP
✓		NOT REQ'D		DATE 9/23/66				—	BW 9-9		RMS WR 10-17-66	AC 10-3-66

	DRAWING TITLE	DRAWING NO.	EO NO.
C	NOTED	LE0280	297

ISSUED BY: L. DE TURRIS 7-18-66 X 1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 35 EN

01
NAS 9-1100

LDW280-11162 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28346	LM-15(45)	1EA
		LM-14(44)	1EA
		LM-13(43)	1EA
		LM-12(42)	1EA
		LM-11(41)	1EA
		LM-10(40)	1EA
		LM-9(39)	1EA
		LM-8(38)	1EA
		LM-7(37)	1EA
		LM-6(36)	1EA
		LM-5(35)	1EA
		LM-4(34)	1EA
		LM-3(33)	1EA
		LM-2(32)	1EA
		LM-1(31)	1EA
LM	LDW280-28346	LTA-8(19)	1EA
PART NO. LDW280-11162-11,-13,-14,-15&-16		GAEC SCH NO. 311	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00			
REV	A	A	A		A			
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED	A	GRUMMAN REL INFO A			
		PRIM NO.	VE(001)		EMF
LAST DASH NO. USED	-16	215	MD-14	A-1-20-7	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.010 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	J. CARROLL 4/28/66		
LAYOUT BY			
CHECKED BY			
GR LDR	W. TRAUT 4/29/66		
VEH. DES. INT	W. BISCHOFF 4/29/66		
STRUCTURES	HILDERMAN-FEB. 4/29/66	PROJ ENGR	J. ALBER-R.N.C. 5/3/66
WEIGHTS	D. ROBESCH 5/2/66	REL GROUP	BOTTI 5/4/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT
ASCENT STAGE - MID SECTION
DISCONNECT R.H. REAR INTERSTAGE

SIZE	CODE IDENT NO.	DWG NO.	REV
B	26512	LDW280-11162	A

SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11162 - N.C. - 5/4/66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
									RETRACED - NO CHANGE - LAST REV. NC - ADDED SHS. 1.10, 2.00, & 3.00 - G. KORDES - 1-16-67.						
A	1	1, 1.10, 2, 3						EO A1	IN FLD FOR -13 1.013 DIM (WAS 1.031)	LTA-8, LM-1, LM-2	✓		G. KORDES 1-16-67	1/17/67	1/19/67
	2	1, 1.10						EO A2	TO -11, -13, -15, & -16 ADD EFFECTIVITIES LM-3 THRU LM-15	LM-3 THRU LM-15	NOT	REQD			
	3	1.10, 3						EO A3	ON-1 INSTL IN FLD DRILL #11 (.190-.196) 3 HOLES, SEE NOTE #3 MAX. FASTENER .1895 DIA. WAS DRILL #19 (.165-.171) 3 HOLES SEE NOTE #3 MAX. FASTENER .1635 DIA.	LTA-8 LM-1 THRU LM-15	✓				
	4								REF EO A1 "-13" SHOULD BE "-11"						
	5								REF EO A2 TO -14 ADD EFFECTIVITIES LM-3 THRU LM-15						
	6								REF EO A3 "ON-1 INSTL" SHOULD BE "ON-11", "SEE NOTE #3 WAS SEE NOTE #3" SHOULD BE "SEE NOTE #1 WAS SEE NOTE #3".						

CHG APPROVED

LTR	GROUP LDR	VEH DES. INT	STRUCTURES	WEIGHTS
A		Pusateri 1/19	CW 1/17	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11162	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11162-16	E	CLIP	AL. ALLOY SH.	QQ-A-250/4	2024	.032 × 2 × 3	T3/T42	88	
								LDW280-11162-15	E	CLIP			2024	.032 × 2 × 3	T3/T42	88	
								LDW280-11162-14	E	GUSSET			2024-T3	.032 × 4 × 4	NONE	88	
								LDW280-11162-13	E	GUSSET			2024-T3	.032 × 4 × 4	NONE	88	
								LDW280-11162-11	E	SUPPORT	AL. ALLOY SH.	QQ-A-250/4	2024-T3	.032 × 4 × 6	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030
						T3	HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11162	A

SCALE NONE SHEET 2.00

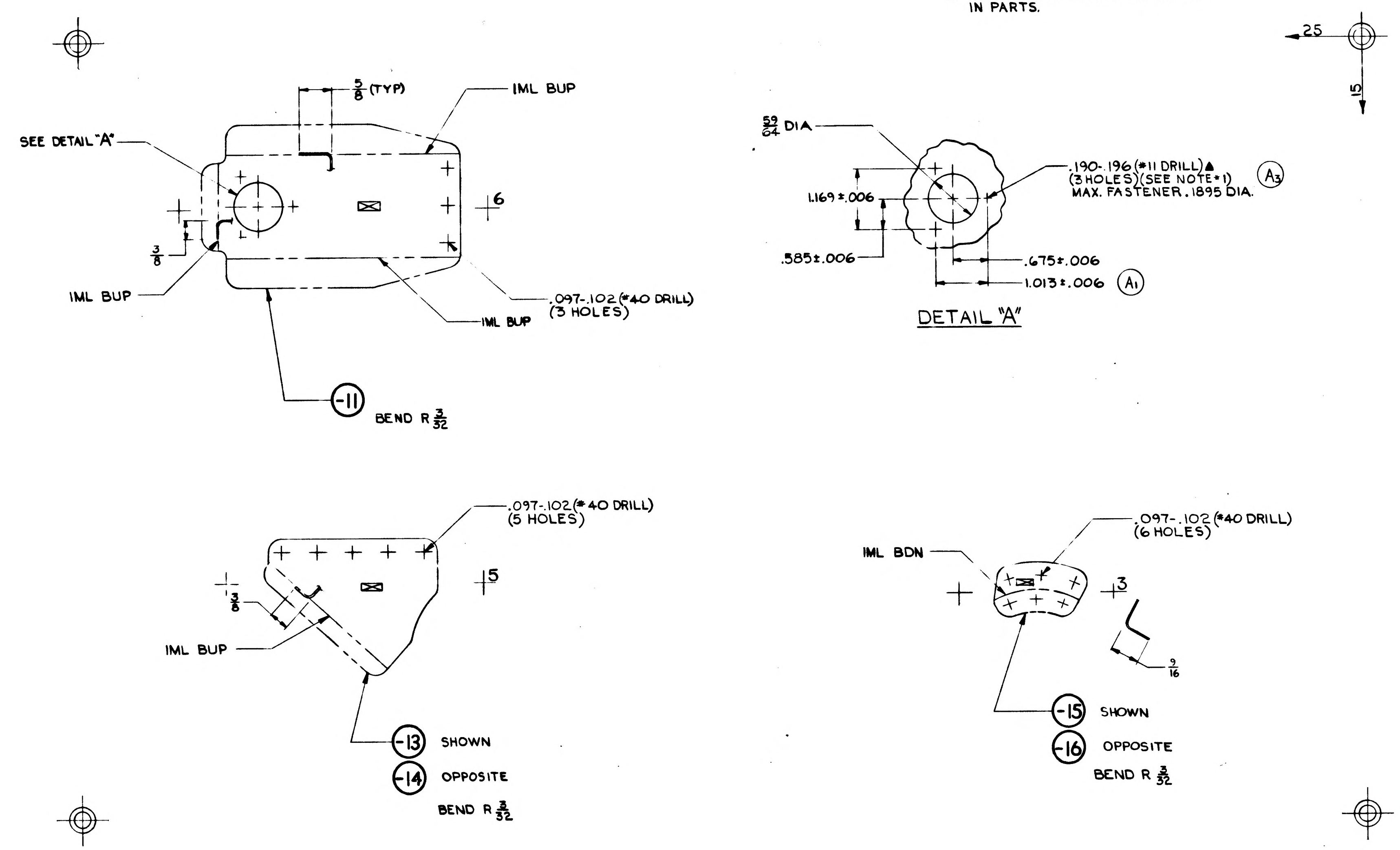
ENG 77.2 7-65

01

NAS 9-1100

LDW280-11162 A

NOTES:
1. FOR HOLES MARKED ▲ SEE DWG LSC270-813 FOR CORRESPONDING HOLE PATTERN.
2. NO TOOLING HOLES PERMITTED IN PARTS.



SEE DETAIL "A"
5/8 (TYP)
IML BUP
6
3/8
IML BUP
IML BUP
.097-.102 (#40 DRILL) (3 HOLES)
-11
BEND R 3/32
59/64 DIA
1.169 ±.006
.585 ±.006
.190-.196 (#11 DRILL)▲ (3 HOLES) (SEE NOTE #1) MAX. FASTENER .1895 DIA.
A3
.675 ±.006
1.013 ±.006
A1
DETAIL "A"
25
15
.097-.102 (#40 DRILL) (5 HOLES)
15
3/8
IML BUP
-13 SHOWN
-14 OPPOSITE
BEND R 3/32
.097-.102 (#40 DRILL) (6 HOLES)
IML BDN
3
9/16
-15 SHOWN
-16 OPPOSITE
BEND R 3/32

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-11162 A

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	D	26512	LDW280-11162	A

SCALE FULL
SHEET 3.00

FOR PHOTO REPRODUCTION

K2

01 NAS 9-1100

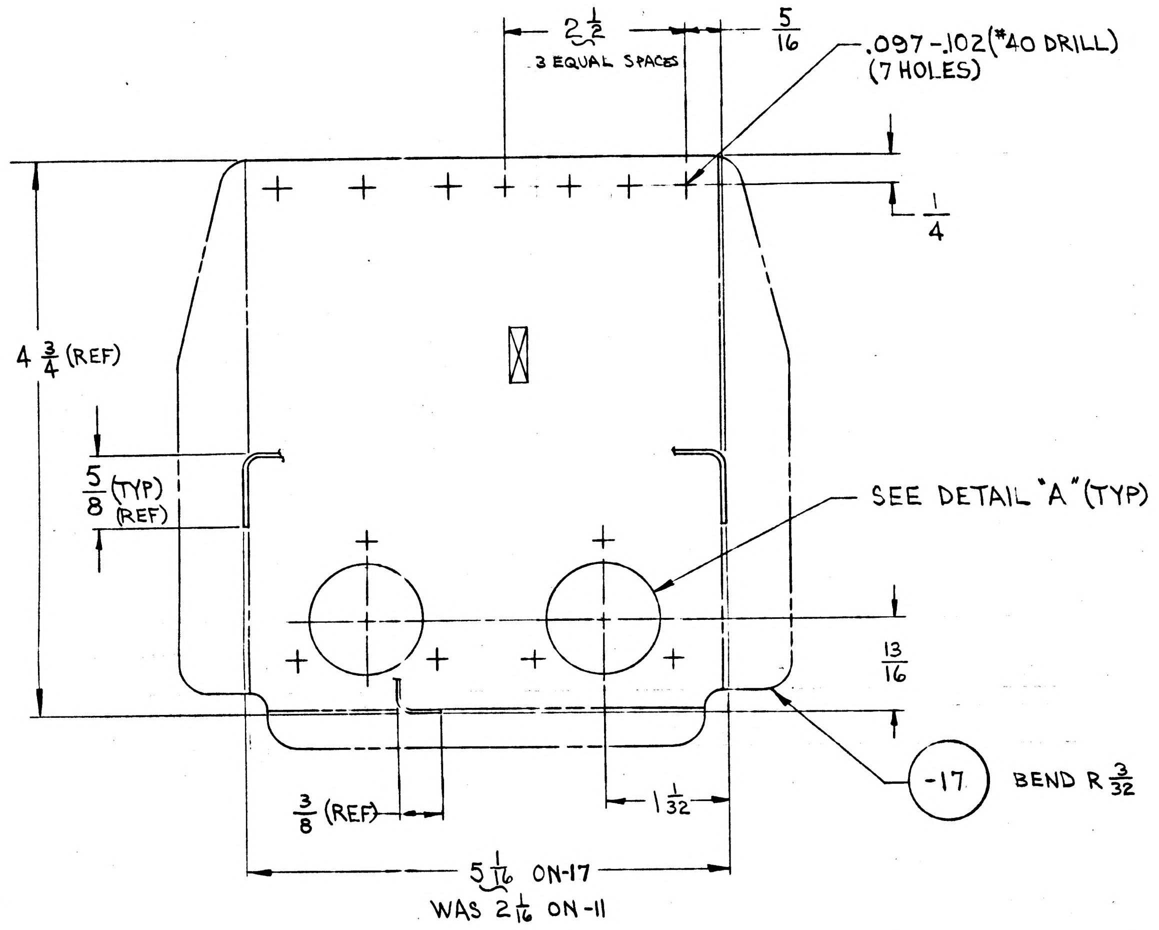
A

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER *

DWG. NO. LDW 280-11162		EO NO. B1	
CONTROL INFO NO. LDW280A8012			

DELETE LM-2(32) & LM-3(33) EFF FROM -13 (IREQD/MOD) (WAS LTA-8(18), LM-1(31) THRU LM-15(45) EFF)
ADD -17 (IREQD/MOD) FOR LM-2(32) & LM-3(33) EFF. N/A LDW 280-28346
-17 IDENT TO -11 EXCEPT AS NOTED. I & T = E



2 1/2
3 EQUAL SPACES
5/16
.097-.102 (#40 DRILL) (7 HOLES)
1/4
4 3/4 (REF)
5/8 (TYP) (REF)
SEE DETAIL "A" (TYP)
13/16
-17
BEND R 3/32
3/8 (REF)
1 1/32
5 1/16 ON-17
WAS 2 1/16 ON-11

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG		LCD-1843

5

REASON FOR EO: TO PROVIDE SUPPORT FOR DISCONNECT OF PROPULSION SYS. DELTA P TRANSDUCER TANKS

DESCRIPTION OF EO: DELETED LM-2(32) & LM-3(33) EFF FROM -11 (IREQD/MOD) ADDED -17 (IREQD/MOD) EFF LM-2(32) LM-3(33) N/A LDW 280-28346

Ⓡ GAEC EO RELEASE: JK 7/24/7

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-2(32)	
		LM-3(33)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY									
✓			-11	DATE	7/17/67			7/17/67			7-21	7-24-67
REVISE DWG	RECORD EO	REWORK	SCRAP		VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SUPPORT - A/S MID SECTION DISCONNECT R.H. REAR INTER STAGE	LDW 280-11162	B1

ISSUED BY V.A. CHRISTINA / F. DE RESPINIS SECTION VDI X1392 GROUP NO. 335 PL 25

01
NAS 9-1100

C

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11162	EO NO. B 2
CONTROL INFO NO. LDW280A8867	

IN MODEL BLOCK FOR -13,-14,-15,-16 & -17; ADD PA-1(47) EFFECTIVITY, N/A LTM280-26626, 1 EA REQD/MODULE.

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG		LCD 1845 ck

3

REASON FOR EO: TO PROVIDE SUPPORT FOR DISCONNECT OF PROPULSION SYS. ΔP TRANSDUCER TANKS

DESCRIPTION OF EO: ADDED PA-1(47) EFFECTIVITY FOR -13-14,-15,-16 & -17.

Ⓡ GAEC EO RELEASE C
JK 8/24/67

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		PA-1(47)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
✓		NOT	REQD.	DATE	8/24/67			FHR 8/24/67	8/24/67		8/25/67	8-26-67
REVISE DWG	RECORD EO	REWORK	SCRAP		VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	[redacted]

PRIORITY: C

DRAWING TITLE: SUPPORT - A/S - M.S.-DISCONNECT- R.H. REAR INTERSTAGE

DRAWING NO. LDW280-11162

EO NO. B2

8/28 ISSUED BY E.J. COMISKEY/F. DeRespinis, 7033 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11164 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW230-53079	LEM-15(45)	1 EA
LEM	LDW280-53079	LEM-14(44)	1 EA
LEM	LDW280-53079	LEM-13(43)	1 EA
LEM	LDW280-53079	LEM-12(42)	1 EA
LEM	LDW280-53079	LEM-11(41)	1 EA
LEM	LDW280-53079	LEM-10(40)	1 EA
LEM	LDW280-53079	LEM-9(39)	1 EA
LEM	LDW280-53079	LEM-8(38)	1 EA
LEM	LDW280-53079	LEM-7(37)	1 EA
LEM	LDW280-53079	LEM-6(36)	1 EA
LEM	LDW280-53079	LEM-5(35)	1 EA
LEM	LDW280-53079	LEM-4(34)	1 EA
LEM	LDW280-53079	LEM-3(33)	1 EA
PART NO. LDW280 - 11164 -11,-13,-15 & -19		GAEC SCH NO. 32-6	

MODEL OR END ITEM | NEXT ASSY | MODULE OR SER NO. | REQD PER MODULE OR END ITEM
PART NO. | GAEC SCH NO.

MODEL OR END ITEM | NEXT ASSY | MODULE OR SER NO. | REQD PER MODULE OR END ITEM
PART NO. | GAEC SCH NO.

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -19

GRUMMAN RELINFO A
PRIM NO. LL(001)
215 MP-14 A-70-18-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY P.SCHELL 6 MAY 66
LAYOUT BY J.LEONARD "
CHECKED BY M 5-11-66
GR. LEADER 5/13/66
VEH.DES.INT. 6/13/14
STRUCTURES FEB 5/16
STRUCTURES Hilderman 5/16
WEIGHTS 5-23
RELIABILITY
PROJ ENGR 5-22
REL GROUP Botti 5-31-66

Ⓡ GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHANNEL
ASCENT STAGE ~ MID-SECTION ~ L.H. & R.H
FORWARD ENGINE SUPPORT

SIZE B | CODE IDENT NO. 26512 | LDW280-11164 | A
SCALE NONE | SHEET 1.00 OF 4

NG 77.1 12-65

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
A	1	1, 1.10, 2 & 3						E.O. A1	ADDED SH. 1.10, SH. 1 OF 4 WAS: SH 1 OF 3. ON SH. 3.00 B/M & MOD BLK ADDED -19 REMOVED -17 REMOVED LTA-3 (13) EFF (ALL DASH NO'S.)	LEM-3 (33) THRU LEM-15 (45) & LTA-3 (13)		-17	J. PERALO 9-9-66		
	2	1.00						E.O. A2	ON SH 1 ADDED TO EFFECTIVITY OF -11, -13, -15, -17 LEM-7 (37) THRU LEM-15 (45)	LEM-7 (37) THRU LEM-15 (45)	NOT REQD				
	3								REF EO A2 "ADDED TO EFFECTIVITY OF -11, -13, -15 & -17" SHOULD BE "OF -11, -13 & -15"	NOTED	NOT REQD				

CHG APPROVED											
LTR	GROUP LDR	VEH. DES. INT.	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILTY					
A			GW 1-11								

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11164	A
SCALE	NONE		SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11164-19	E	CHANNEL	AL ALLOY SH	QQ-A-250/12	7075	.063 x 4 1/8 x 7	T6	88	
		-15	E					.063 x 4 1/8 x 8 5/8			
		-13	E					.063 x 4 x 8 1/2			
		LDW280-11164-11	E	CHANNEL	AL ALLOY SH	QQ-A-250/12	7075	.063 x 3 1/2 x 6 3/4	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	AL HEAT TREAT	MIL-H-6088
88	ANODIZE	LSP 14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

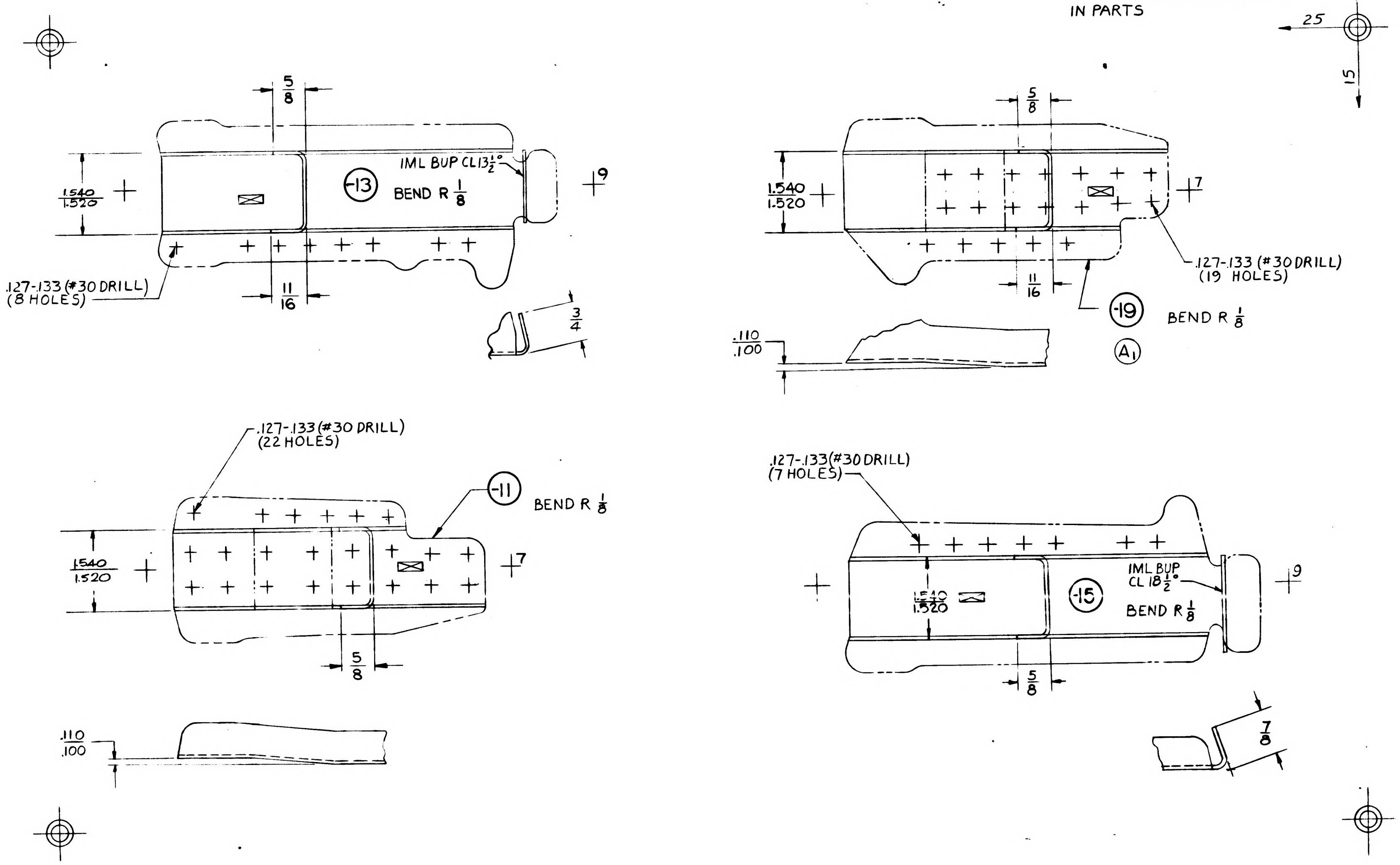
SIZE	CODE IDENT NO.		
B	26512	LDW280-11164	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


5/8
1.540
1.520
IML BUP CL13½°
-13
BEND R ⅛
9
.127-.133 (#30 DRILL)
(8 HOLES)
11/16
3/4
5/8
1.540
1.520
7
.127-.133 (#30 DRILL)
(19 HOLES)
11/16
-19
BEND R ⅛
A1
.110
.100
25
15
.127-.133 (#30 DRILL)
(22 HOLES)
-11
BEND R ⅛
1.540
1.520
7
5/8
.110
.100
.127-.133 (#30 DRILL)
(7 HOLES)
1.540
1.520
IML BUP
CL 18½°
-15
BEND R ⅛
9
5/8
7/8

NOTE:
NO TOOLING HOLES PERMITTED
IN PARTS

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	√

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
D	26512	LDW280-11164	A

MODEL OR END ITEM
SCALE FULL
SHEET 3.00

FOR PHOTO REPRODUCTION

K2

LDW280-11164 A

G1

NAS 9-1100

LDW280-11165 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28482	LM-15(45)	1 EA
		LM-14(44)	1 EA
		LM-13(43)	1 EA
		LM-12(42)	1 EA
		LM-11(41)	1 EA
		LM-10(40)	1 EA
		LM-9(39)	1 EA
		LM-8(38)	1 EA
		LM-7(37)	1 EA
		LM-6(36)	1 EA
		LM-5(35)	1 EA
		LM-4(34)	1 EA
	LDW280-28482	LM-3(33)	1 EA
	LDW280-28482	LM-2(32)	1 EA
	LDW280-28482	LM-1(31)	1 EA
LM	LDW280-28482	LTA-8(18)	1 EA

PART NO. LDW280-11165-11,-12,-13 & -14.

GAEC SCH NO. 32

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A

LAST SECT LTR USED

LAST DASH NO. USED -14

GRUMMAN REL INFO A

PRIM NO. 215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	DI MARCO 5-2	RELIABILITY	
LAYOUT BY	DI MARCO 5-2		
CHECKED BY			
GR LEADER	TRAUT 5-4		
VIH DES INT	BISCHOFF 5-4		
STRUCTURE	FEB 5-5	PROJ ENGR	ALBER 5-10-66
STRUCTURE	BUNCE 5-5	REL GROUP	BOTTI 5-11-66
WEIGHTS	ROBESCH 5-9		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT
ASCENT STAGE – MID SECTION
-Z27 BLK. ELEC + X294.643

SIZE B
CODE IDENT NO. 26512
LDW280-11165 A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11165 NO CHG 5-11-66

01 NAS 9-1100

REVISIONS
FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED NO CHG LAST REV NO CHG LOFTED DWG WAS DIM'S DWG, ADDED SH. 1.10 2.00 & 3.00 AUGELLO 11-1-66	NOT	REQD			11-10-66	
A	1	1.00, 1.10 & 3.00						EO A1	ON LDW280-11165-11 ADDED DRILL #19 (.165-.171) (3) ON LDW280-11165-13 & -14 ADDED DRILL #19 (165.171) ADDED GROUNDING NOTE	LTA-8, LM-1 & -2	✓		S AUGELLO 11-1-66		
	2	1.00 & 1.10						EO A2	ON -11, -12, -13 & -14 ADDED LM-3 THRU LM-15 EFF EG	LM-3-4, -5, -6, -7, -8, -9, -10, -11, -12, -13, -14 & -15	NOT	REQD			

CHG APPROVED	LTR	GROUP LDR	VIH DES INT	STRUCTURE	STRUCTURE	WEIGHTS	RELIABILITY
	A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11165	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11165-14	E	BRACKET	AL ALLOY SH	QQ-A-355	2024-T3	.032 X 4 X 4	NONE	88	
		↕ -13	↕	BRACKET	↕	↕	↕	.032 X 4 X 4	NONE	88	
		-12		CHANNEL				.032 X 5 X 5	NONE	88	
		LDW280-11165-11	E	CHANNEL	AL ALLOY SH	QQ-A-355	2024-T3	.032 X 5 X 5	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11165	A

SCALE NONE

SHEET 2.00

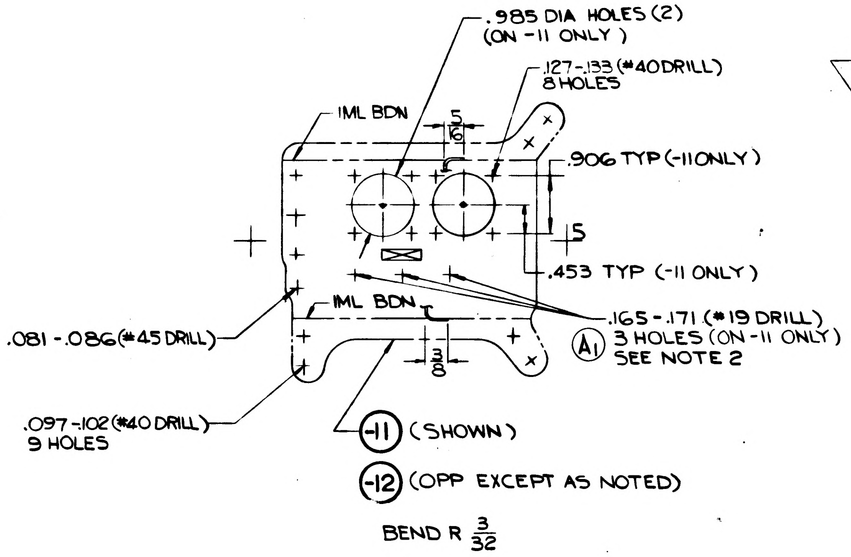
ENG 77.2 7-65

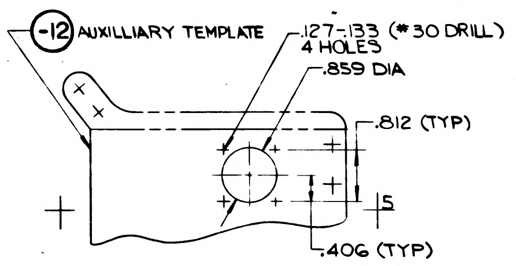
01

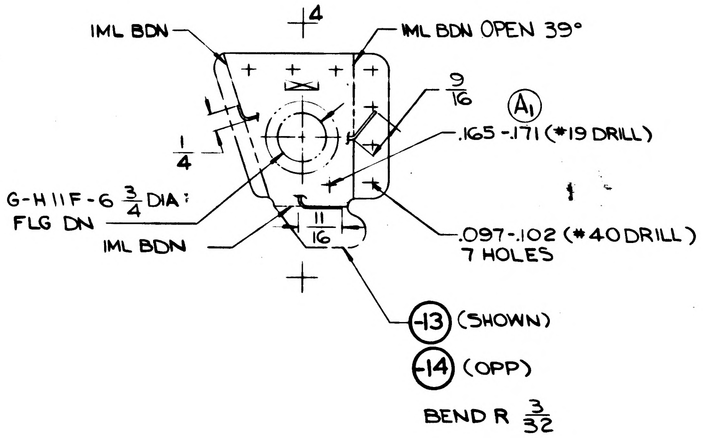
NAS 9-1100

LDW280-11165 A

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. HOLES TO BE PREPARED FOR ELECTRICAL GROUNDING PER LSP-14-13302 CLASS B.


.985 DIA HOLES (2)
(ON -11 ONLY)
.127-.133 (#40 DRILL)
8 HOLES
IML BDN
5/16
.906 TYP (-11 ONLY)
5
.453 TYP (-11 ONLY)
IML BDN
3/8
.165-.171 (#19 DRILL)
A1
3 HOLES (ON -11 ONLY)
SEE NOTE 2
.081-.086 (#45 DRILL)
.097-.102 (#40 DRILL)
9 HOLES
-11 (SHOWN)
-12 (OPP EXCEPT AS NOTED)
BEND R 3/32


-12 AUXILIARY TEMPLATE
.127-.133 (#30 DRILL)
4 HOLES
.859 DIA
.812 (TYP)
5
.406 (TYP)


4
IML BDN
IML BDN OPEN 39°
9/16
A1
.165-.171 (#19 DRILL)
1/4
G-H11F-6 3/4 DIA
FLG DN
IML BDN
11/16
.097-.102 (#40 DRILL)
7 HOLES
-13 (SHOWN)
-14 (OPP)
BEND R 3/32

25

20

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-11165 A

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	D	26512	LDW280-11165	A
	SCALE FULL		SHEET 3.00	

2 FOR PHOTO REPRODUCTION K2

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW280-11165
EO NO. B1
CONTROL INFO NO. LDW280B1648

ON -11, -12, -13 & -14 REVISE EFF AS FOLLOWS

DELETE EFF LM-8(38) THRU LM-15(45)

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD 2547

REASON FOR EO: BRACKETS REMOVED DUE TO REROUTING OF CABLE

DESCRIPTION OF EO: ON -11, -12, -13 & -14 DELETED EFF LM-8(38) THRU LM-15 (45)

GAEC EO RELEASE: JK 2/5/8

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-8(38)	THRU
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO ☐
DISPOSITION OF PARTS: REWORK ☐ SCRAP ✓

APPROVED BY					CW			
DATE	1/30/68			1-30-68	2-2-68		1/30/68	2-3-68
E	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: C
DRAWING TITLE: SUPPORT A/S - M/D -Z27 BLK. ELEC +X294.643
DRAWING NO.: LDW280-11165
EO NO.: B1

ISSUED BY HUGH RYAN X1392 1-22-68 2-2-68 SECTION VDI(EQUIP LINES) GROUP NO. 332 PL 25

01 NAS 9-1100

LDW280-11169

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28484	LEM-6(36)	1 EA
		LEM-5(35)	1 EA
		LEM-4(34)	1 EA
		LEM-3(33)	1 EA
		LEM-2(32)	1 EA
		LEM-1(31)	1 EA
LEM	LDW280-28484	LTA-8(18)	1 EA

PART NO. LDW280-11169-11,-12,-13 & -14

GAEC SCH NO. 313

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -14

GRUMMAN REL INFO

PRIM NO. 215 VE(001) M812 JR 5/21

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM #1

DOCUMENTATION TYPE II

DRAWN BY	OMARA 5/5/66	RELIABILITY	—
LAYOUT BY	CURASI		
CHECKED BY	EG 5-9-66		
GR LEADER	A Pusateri 5-12		
VEH DES INT	5/12		
STRUCTURES	5/20	PROJ ENGR	Plunkett 1 June 66
STRUCTURES	Hoberman 5/20	REL GROUP	Botts 6-2-66
WEIGHTS	W. G. Mandras 5/31		

③ GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHANNEL
ASCENT STAGE-CABIN-RCS SHIELD-FWD

SIZE B

CODE IDENT NO. 26512

LDW280-11169

SCALE NONE

SHEET 1.00 OF 3

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11169-14	E	CHANNEL	AL ALLOY SH	QQ-A-355	2024	.050x2⅞x7¾	T42	88	
		-13						.050x2⅞x7¾			
		-12						.050x2⅞x8¾			
		LDW280-11169-11	E	CHANNEL	AL ALLOY SH	QQ-A-355	2024	.050x2⅞x8¾	T42	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T42	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B | CODE IDENT NO. 26512 | LDW280-11169

SCALE NONE | SHEET 2.00

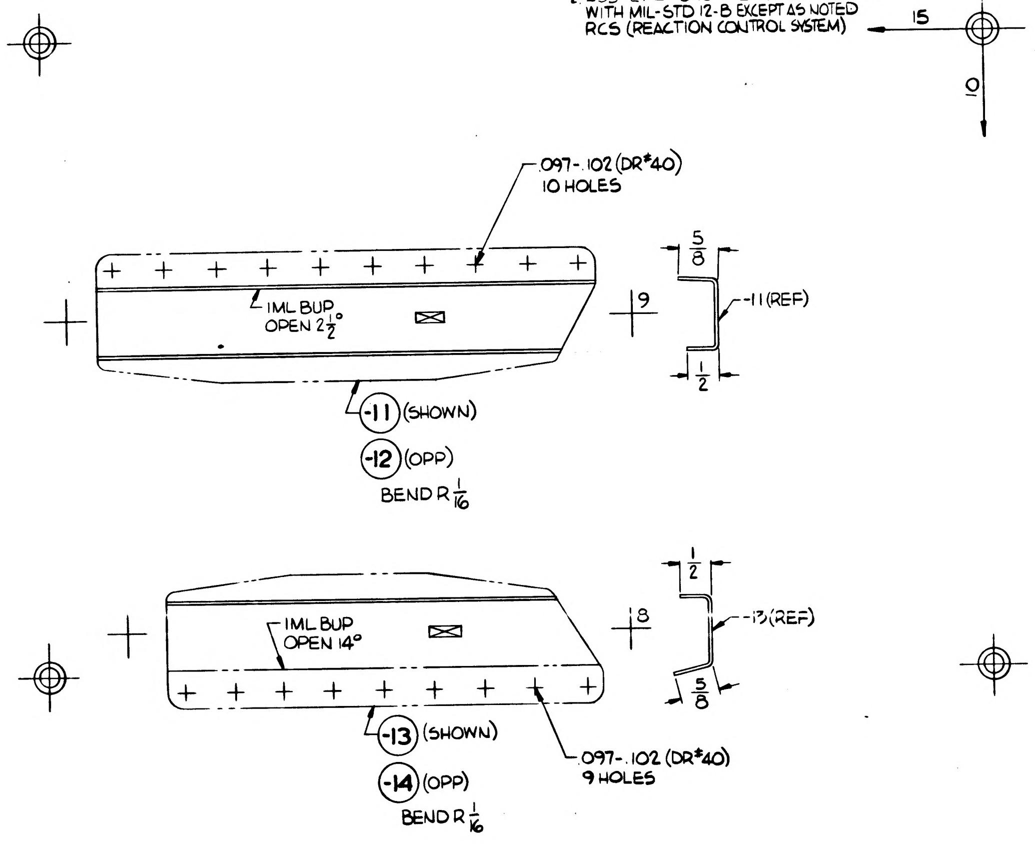
ENG 77.2 7-66

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. ABBREVIATIONS ARE IN ACCORDANCE WITH MIL-STD 12-B EXCEPT AS NOTED
RCS (REACTION CONTROL SYSTEM)

TRAM GO



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-11169

LDW280-11169

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

LEM MODEL OR END ITEM	SIZE C	CODE IDENT NO. 26512	LDW280-11169
	SCALE FULL		SHEET 3.00

FOR PHOTO REPRODUCTION

K2

NAS 9-1100

25
ENG 32.5 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0230
EO NO. 297
CONTROL INFO NO. LDW280 A 0659

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS* THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-11161	B1	SEE DRAWING
-11163	A1	
P 11168	B1	
-11169	A1	
-11170	A1	
-11178	A1	
P 11180	B1	
-11181	B1	
-11182	A1	
-11183	A1	
-11192	B1	
-11204	A1	
-11280	A2	
-11284	B1	
-11294	A5	
-11296	B2	
-11297	B1	
-11300	B1	
-11301	B1	
-11305	B1	
-11316	A1	
-11320	B1	
-11322	A1	
-11337	B1	
LDW280- -11374	A3	
-		
		SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE: FR 10/17/6

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM	8(38) LEM-9(39)
LEM		LEM-10(40) LEM-1	1(41) LEM-12(42)
LEM		LEM-13(43) LEM-1	4(44) LEM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: NOT REQ'D
APPROVED BY: DATE 9/23/66 VDI
GROUP LEADER: —
STRESS GROUP: bw 9-19
PROJ ENGRG: 10-17-66
EDMP: AC 10-3-66
PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LE0230
EO NO. 297

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 55 EN

01
NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11169	EO NO. A2
CONTROL INFO NO. LDW280B5798	

RESTRICT -11 & -12 TO LTA-8(18), LM-1(31) THRU LM-4(34)
& LM-6(36) THRU LM-15(45)

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	✓ LCD 3499

GAEC EO RELEASE 10/23

REASON FOR EO	DESCRIPTION OF EO
ADDITION OF RCS PLUME DEFLECTOR	RESTRICTED EFF. OF -11 & -12 BY REMOVING LM-5(35)

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-5(35)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG	RECORD EO	REWORK	SCRAP
✓			✓

APPROVED BY					CL			
DATE	10/22/68	10/22/68		10/11/68	10/22/68		10/22/68	10-25-68
	VDI	~~SUPPORT~~ THERM	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	CHANNEL A/S ~ CABIN ~ RCS SHLD ~ FWD	LDW280-11169	A2

ISSUED BY 10-24-68 D. KLINGENER X 1641 SECTION VDI GROUP NO. 335 PL 25

0 1 NAS 9-1100

LDW280-11170

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28483	LEM-6(36)	2 EA
		LEM-5(35)	2 EA
		LEM-4(34)	2 EA
		LEM-3(33)	2 EA
		LEM-2(32)	2 EA
		LEM-1(31)	2 EA
LEM	LDW280-28483	LTA-8(18)	2 EA

PART NO. LDW280-11170-13 & -14 — GAEC SCH NO. 30-

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28484	LTA-8(18)	1 EA
		LEM-6(36)	1 EA
		LEM-5(35)	1 EA
		LEM-4(34)	1 EA
		LEM-3(33)	1 EA
		LEM-2(32)	1 EA
LEM	LDW280-28484	LEM-1(31)	1 EA

PART NO. LDW280-11170-11, 12, 15 & -16 — GAEC SCH NO. 31-3

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00						
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL & INFO			
LAST DASH NO. USED	-16	PRIM NO.	VE(001)		
		215	MP12		JR 5-71

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	MONTEMAGNO 5-6-66	RELIABILITY	~
LAYOUT BY	CURASI		
CHECKED BY	ARATOLI 5-6-66		
GR LEADER	J. Pusateri 5-12		
VEH DES INT	5/12		
STRUCTURES	5/20	PROJ ENGR	Plunkett 1 June 66
STRUCTURES	H. Herman 5/20	REL GROUP	Botts 6-2-66
WEIGHTS	M. J. Mandras 5/31		

®
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP
ASCENT STAGE- REACTION CONTROL
SYSTEM SHIELD FWD

SIZE	CODE IDENT NO.	
B	26512	LDW280-11170
SCALE	NONE	SHEET 1.00 OF 3

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11170-16	E	CLIP	AL ALLOY SH	QQ-A-355	2024	.080 X 1 7/8 X 2 1/8	T42	88	
		-15						.080 X 1 7/8 X 2 1/8			
		-14						.080 X 2 1/8 X 2 5/3			
		-13						.080 X 2 1/8 X 2 5/8			
		-12						.080 X 1 7/8 X 2 1/8			
		LDW280-11170-11	E	CLIP	AL ALLOY SH	QQ-A-355	2024	.080 X 1 7/8 X 2 1/8	T42	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T42	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP 14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11170

SCALE NONE

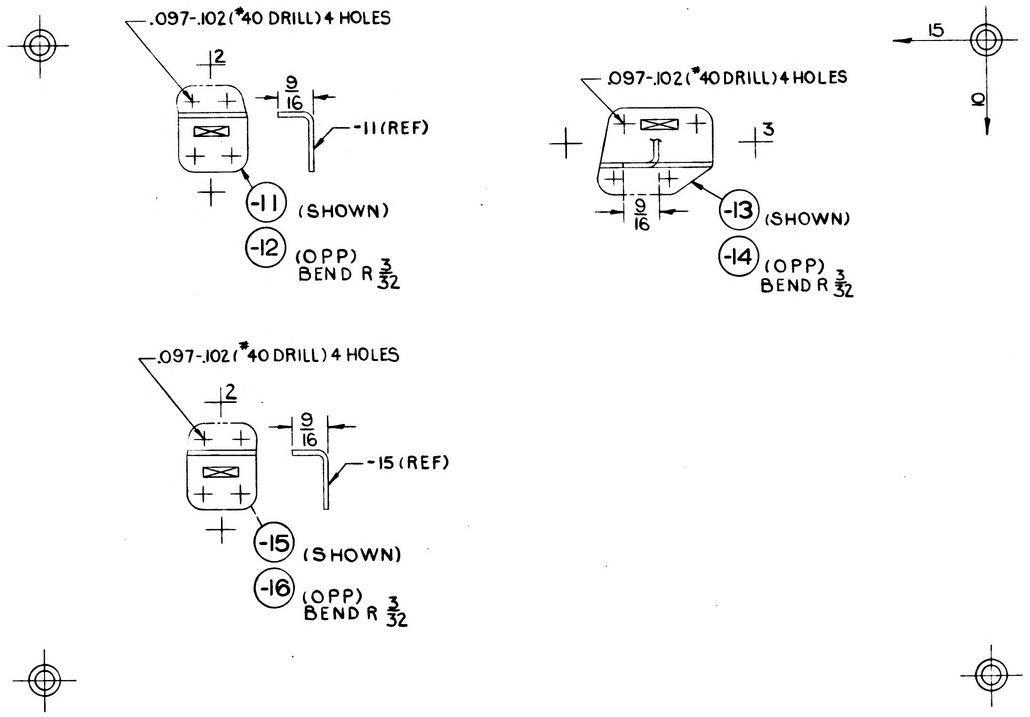
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.



.097-.102 (#40 DRILL) 4 HOLES
2
9/16
-11 (REF)
-11 (SHOWN)
-12 (OPP)
BEND R 3/32
.097-.102 (#40 DRILL) 4 HOLES
3
9/16
-13 (SHOWN)
-14 (OPP)
BEND R 3/32
15
10
.097-.102 (#40 DRILL) 4 HOLES
2
9/16
-15 (REF)
-15 (SHOWN)
-16 (OPP)
BEND R 3/32

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	√

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

LEM	SIZE C	CODE IDENT NO. 26512	LDW280-11170
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

K2

FOR PHOTO 1 REPRODUCTION

LDW280-11170

LDW280-11170

NAS 9-1100

01

25

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 20.2 REV 3-63

DWG. NO. LE0260
EO NO. 297
CONTROL INFO NO. LDW 230 A 0659

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS * THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9 (39), LEM-10(40), LEM-11(41), LEM-12 (42), LEM-13(43) LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-11161	B1	SEE DRAWING
-11163	A1	↑
P 11168	B1	
-11169	A1	
-11170	A1	
-11178	A1	
P 11180	B1	
-11181	B1	
-11182	A1	
-11183	A1	
-11192	B1	
-11204	A1	
-11280	A2	
-11284	B1	
-11294	A5	
-11296	B2	
-11297	B1	
-11300	B1	
-11301	B1	
-11305	B1	
-11316	A1	
-11320	B1	
-11322	A1	
-11337	B1	
LDW280- -11374	A3	↓
~~LDW280~~		SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE: FK 10/17/66

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO
LEM		LEM-7(37) LEM	8(38) LEM-9(39)
LEM		LEM-10(40) LEM-1	1(41) LEM-12 (42)
LEM		LEM-13(43) LEM-1	4(44) LEM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: NOT REQ'D
APPROVED BY: DATE 9/23/66

			—	bw		RMS (WR)	AC
9/23/66			—	9-19		10-17-66	10-3-66
ID	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	EQUIP

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO: LE0230
EO NO: 297

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 35 EN

01

NAS 9-1100

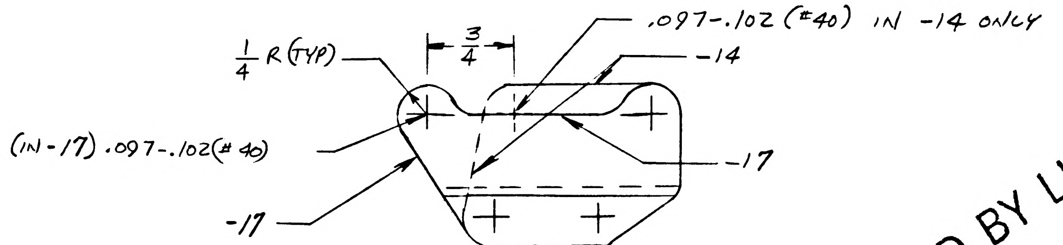
ENG 32.1 REV 3-65

A

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER EMF-A

DWG. NO. LDW280-11170			EO NO. A2
CONTROL INFO NO. LM-5-12139			

IN MOD BLK: QTY FOR -14, 2 REQD FOR LM-1 THRU -15 CHANGE TO 1 REQD
ADD -17, 1 REQD FOR LM-1 THRU LM-15, N/A LDW280-28484



LDW280-11170-17

IDENTICAL TO -14 EXCEPT
AS SHOWN ABOVE

RELEASED BY LIAISON

IN MODEL BLOCK N/A OF -13 & -14 S/B LDW280-28484 (WAS LDW280-28483).

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☐

5

REASON FOR EO	DESCRIPTION OF EO	GAEC C EO RELEASE
CAN'T DRIVE BLIND RIVET N/A OF -13 & -14 INCORRECT	IN -14 MODEL BLOCK, 1 REQ'D WAS 2 REQ'D FOR LM-1 THRU LM-15 ADDED -17, N/A OF -13 & -14 WAS LDW280-28483.	✓ VE

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LTA-8 (11)	LM-1 (31)	
		THRU	
		LM-15 (45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS									
REVISE DWG	RECORD EO	REWORK	SCRAP								
✓			-14								
				APPROVED BY	W			=		EVB	RMC (E)
				DATE	2/9/67			=	1/11/67	1/11/67	1-16-67
				1	VD1	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	CLIP A.S.~ RCS SHIELD FWD	LDW280-11170	A2

~~CONT~~ 1/13/67

ISSUED BY LIAISON E V BERGEMAN X-2485 SECTION VD1 GROUP NO. 280 PL 35

01

NAS 9-1100

A

LDW280-11171

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW 280-28253	LEM-2(32)	1
LEM	LDW280-28253	LEM-1(31)	1
LEM	LDW280-28253	LTA-8(18)	1
PART NO. LDW 280-11171-11		GAEC SCH NO. 222	5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED	
LAST DASH NO. USED	-11

GRUMMAN REL INFO A

PRIM NO. 207 LE(001) MP12 JR.5125A

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM #1

DOCUMENTATION TYPE II

DRAWN BY	W. FRANKI ~ 5/20/66	RELIABILITY	~
LAYOUT BY	E.L. HARRIGAN		
CHECKED BY	M 5·21·66		
GR. LEADER	R. V. Reilly 5/26/66		
VEH. DES INT.			
STRUCTURES		PROJ ENGR	Plunkett 2 Jun 66
STRUCTURES	Hilberman 5/26	REL GROUP	Bolte 6-6-66
WEIGHTS			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE ~ MID SECTION ~ ELECTRIC CONNECTOR

SIZE	CODE IDENT NO.		
B	26512	LDW280-11171	A
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 12-65

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NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00, 1.10, 2.00 & 3.00						EO A1	E.O. A1. INITIAL DRAWING RELEASE PARTS MADE PER E.O.	LTA-8, LEM-1 & -2	NOT	REQD.	FRANK F 5-21-66		
	2	1.10 & 3.00						Ⓡ	DIMENSION 1.312 (REF) SHOULD BE 2.312 (REF) REF. E.O. A1	NOT REQD.					

FOR CONTINUATION OF REVISIONS SEE SHEET ______

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW 280-11171	A
SCALE NONE			SHEET 1.10

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NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11171-11	E	BRACKET	AL ALLOY EXTR.	QQ-A-200/3	2024-T3511	DIE*62248 × 2 7/8	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW 280-11171	A
SCALE NONE		SHEET 2.00	

ENG 77.2 7-65

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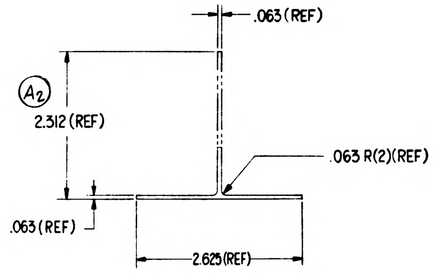
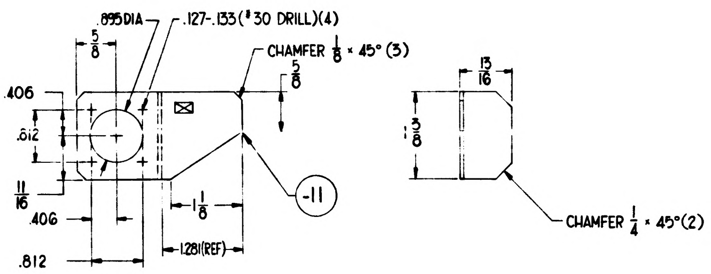
NAS 9-1100





NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	C	26512	LDW 280-11171	A
	SCALE FULL		SHEET 3.00	

LDW 280-11171

LDW 280-11171 A

NAS 9-1100

101

ENG 32.1 REV 3-65 *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO.	LDW280-11171	EO NO.	B2
CONTROL INFO NO.	LEM-3-3786		

IN MODEL BLOCK FOR -11 ADD THE FOLLOWING EFFECTIVITIES: LEM-4(34) THRU LEM-15(45) N/A LDW280-23253, 1 REQD/MOD.

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: TO HAVE DETAIL PARTS AGREE WITH N/A.

DESCRIPTION OF EO: NOTED ABOVE

GAEC EO RELEASE C

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-4(34) THRU LEM-15(45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG	RECORD EO	REWORK	SCRAP
✓		✓	

APPROVED BY						BM			
DATE 9/3/66	9/22	10-3		—	—	9-6-66	9-6-66	9-10-66	9/8/66
	~~SUPPORT~~	RELIAB. GROUP		GROUP LEADER		STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	BRACKET A/S ~ MID. SECT. ~ ELECT. CON.	LDW280-11171	B2

ISSUED BY LIAISON ~ J. KOSLOSKI x2151 SECTION V.D.I. GROUP NO. 335 PL 35

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NAS 9-1100

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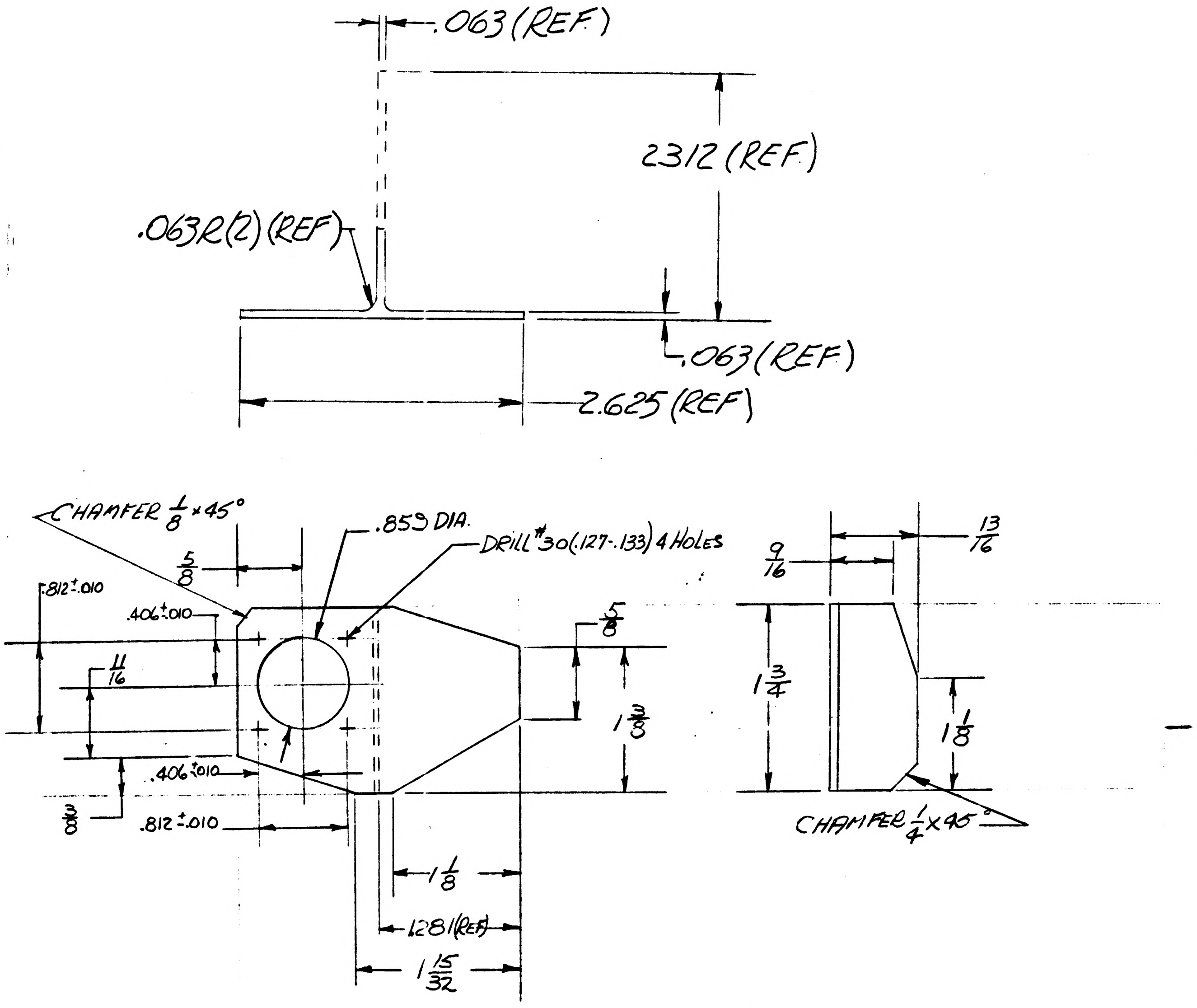
NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11171 | EO NO. B3
CONTROL INFO NO. L-M5-9251


.063 (REF)
2312 (REF)
.063R(2) (REF)
.063 (REF)
2.625 (REF)
CHAMFER 1/8 × 45°
.859 DIA.
DRILL #30 (.127-.133) 4 HOLES
5/8
.812±.010
.406±.010
11/16
5/8
1 3/8
.406±.010
3/8
.812±.010
1 1/8
1.281 (REF)
1 15/32
9/16
13/16
1 3/4
1 1/8
CHAMFER 1/4 × 45°

(ADD) LDW280-11171-11-1 BRACKET (SCRAP -11)
AL ALLOY EXTRUSION-2024-T3511~QQ-A-267
FINISH #88~MAKE FROM DIE #62248

LM MODEL	LDW280-28253 NEXT ASSY	LTA-8(18) LM-1(31) LM-2(32), LM-3(33) MODULE	1 REQD/MODULE
PART NUMBER LDW280-11171-11-1			

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☐

REASON FOR EO: TO CORRECT INTERFERENCE WITH CLAMP-ON TRANSDUCER

DESCRIPTION OF EO: REMOVED -11 & ADDED -11-1

© GAEC EO RELEASE: FR

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO
LM		NOTED	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
✓			-11	10-6-66	WT 10/6/66 VDI			JFJ 10-6-66	CH 10-7-66	RMC 10-11-66	10-7-66	

PRIORITY: C
DRAWING TITLE: BRACKET A/S~M/S~ELEC. CONNECTOR
DRAWING NO.: LDW280-11171
EO NO.: B3

ISSUED BY F. LANZARO / W. TRAUT 6454 SECTION VDI GROUP NO. 335 PL 5

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG NO. LDW280-11171
EO NO. B4
CONTROL INFO NO. LEM-5-9400

CANCEL E.O. LDW280-11171 B_2

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		✓

REASON FOR EO: R & D EQUIP. NOT REQD. FOR THIS EFFECTIVITY

DESCRIPTION OF EO: CANCELLED E.O LDW280-11171 B_2

Ⓑ GAEC EO RELEASE C
FR

MODEL	EFFECTIVITY PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM 4 (34)	
		THRU	
LM		LM 15 (45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS											
				APPROVED BY	WT				JD	CH	PMC	
✓		✓		DATE	10/12/66				10-13-66	10/13	10-19-66	10-19-66
REVISE DWG	RECORD EO	REWORK	SCRAP	10-12-66	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C
DRAWING TITLE: BRACKET A/S~M/S ~ELEC. CONNECTOR
DRAWING NO. LDW280-11171
EO NO. B4

✓ ISSUED BY F. LANZARO / F. STEINMETZ 6455 SECTION VDI GROUP NO. 335 PL 5 EMF

01 NAS 9-1100

LDW280-11173 C

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 126	LDW280-28175	LTA-8 (18)	1 EA
PART NO. LDW280-11173-21-1,-23-1, -25-1 & -26-1			
LEM	LDW280-28175	LTA-8 (18)	1 EA

PART NO. LDW280-11173-21,-23,-25,-26 — GAEC SCH NO. 30

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28175	ZERO "G" TEST FIXTURE	1 EA
LEM	LDW280-28175	LEM-15(45)	1 EA
		LEM-14(44)	1 EA
		LEM-13(43)	1 EA
		LEM-12(42)	1 EA
		LEM-11(40)	1 EA
		LEM-10(40)	1 EA
		LEM-9(39)	1 EA
		LEM-8(38)	1 EA
		LEM-7(37)	1 EA
		LEM-6(36)	1 EA
		LEM-5(35)	1 EA
		LEM-4(34)	1 EA
		LEM-3(33)	1 EA
		LEM-2(32)	1 EA
LEM	LDW280-28175	LEM-1(31)	1 EA

PART NO. LDW280-11173 -11, -13, -15 & -16 — GAEC SCH NO. 30

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28175	ZERO "G" TEST FIXTURE	1 EA
LFM 126	LDW280-28175	LTA-8(18)	1 EA
LEM	LDW280-28175	LEM-15(45)	1 EA
		LEM-14(44)	1 EA
		LEM-13(43)	1 EA
		LEM-12(42)	1 EA
		LEM-11(41)	1 EA
		LEM-10(40)	1 EA
		LEM-9(39)	1 EA
		LEM-8(38)	1 EA
		LEM-7(37)	1 EA
		LEM-6(36)	1 EA
		LEM-5(35)	1 EA
		LEM-4(34)	1 EA
		LEM-3(33)	1 EA
		LEM-2(32)	1 EA
		LEM-1(31)	1 EA
LEM	LDW280-28175	LTA-8 (18)	1 EA

PART NO. LDW280-11173-17, -19 — GAEC SCH NO. 30

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	C	C	C	C

LAST SECT LTR USED J-J
LAST DASH NO. USED -26
GRUMMAN REL INFO C
PRIM NO. 215 JK(601) P16 C-5/2/0

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II
DRAWN BY RPALMER 6-9-66
RELIABILITY
LAYOUT BY DIJENNARO 6/16/66
CHECKED BY F 6-15-66
GR LEADER 6-16-66
VEH DESINT 11/18
STRUCTURE 6/21
STRUCTURE 6/21
WEIGHTS 6-28
PROJ ENGR 29 Jun 66
REL GROUP Botti 6-30-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SHIELD
ASCENT STAGE-CABIN-HATCH-THERMAL

SIZE B
CODE IDENT NO. 26512
LDW280-11173 C
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

REV "C" CDR 5-8-68 (4)

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
A	1	1, 1.10, 2, 3						EO-A1	ADDED -21, -23, -25, & -26. REVISED EFF OF -11, -13, -15, -16, -17, & -19. REVISED -15, & -16 TRIM & PILOT HOLES. SH 1 OF 4 WAS SH 1 OF 3. ADDED SH 1.10	LTA-8, LEM-1, -2	✓		P. CARTSELOS 9-6-66		
B	1	1.00 & 1.10						EO-B1	FOR -11, -13, -15, -16, -17 & 19 ADDED LM-3 THRU LM-15 EFFECTIVITY	LM-3 THRU LM-15	NOT	REQD	NARONIS 3/15/67		
	2	1.10 & 3.00	10A, 7A						FOR -11, -13, -21 & -23 ADDED COORDINATES. FOR -11 & -21 ADDED .069-.074 (#50 DRILL) 4 HOLES & 3 HOLES FOR -13 & -23.	LTA-8, LM-1 THRU LM-15	-11, -13, -21 & -23		WCG	3/21/67	
C	1	1.10, 3.00			✓			LEO280-577	ADDED NOTE 5	LTA-8, LM-1 THRU LM-15	NOT	REQD	H. BARFOOT 4-22-68		
	2	1.10, 3.00					✓	EO-C2	ON-13 REVISED POSITION OF #50 HOLE	LM-4 THRU LM-15	✓				
	3	1.00				✓		LEO280-727 LCD1367CCA547	ON-11, -13, -15, -16, -17 & -19 ADDED ZERO "G" REQUIREMENTS	ZERO "G" TEST	NOT	REQD			
	4	1.00, 1.10, 2.00, 3.00		LFM 126		✓		LCD1021-33	ADDED -21-1, 23-1, 25-1 & 26-1. ~ ON-17 & -19 ADDED END ITEM 126 REQ'MTS.	LTA-8	NOT	REQD		5/3/68	

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY	THERMO
B	—	3/21	JV 3/21				
C	4/30	5/1/68	5/3/68				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11173	C
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11173-26-1	E	SHIELD	MAKE FROM LDW280-11310-13-1			10 3/8 x 57 3/4	NONE	NONE	9B
		-25-1		SHIELD	MAKE FROM LDW280-11310-13-1			10 3/8 x 57 3/4	NONE	NONE	9B
		-23-1		SHIELD	MAKE FROM LDW280-11310-13-1			16 3/8 x 29	NONE	NONE	7B
		-21-1		SHIELD	MAKE FROM LDW280-11310-13-1			16 3/8 x 29	NONE	NONE	10A
		-26		SHIELD	MAKE FROM LDW280-11310			10 3/8 x 57 3/4	NONE	NONE	9C
		-25		SHIELD	MAKE FROM LDW280-11310			10 3/8 x 57 3/4	NONE	NONE	9C
		-23		SHIELD	MAKE FROM LDW280-11310			16 3/8 x 29	NONE	NONE	7B
		-21		SHIELD	MAKE FROM LDW280-11310			16 7/8 x 29	NONE	NONE	10A
		-19		ANGLE	AL ALLOY SH	QQ-A-250/4	2024	.032 X 7 1/2 X 12 1/2	T42	76	4B
		-17		ANGLE		QQ-A-250/4	2024	.032 X 9 1/4 X 16 1/4	T42	76	4A
		-16		SHIELD		QQ-A-250/5	SEE NOTE 2	.020 X 10 3/8 X 57 3/4	CM	NOTE 4	9C
		-15			AL ALLOY SH	QQ-A-250/5	SEE NOTE 2	.020 X 10 3/8 X 57 3/4	CM	NOTE 4	9C
		-13			MAKE FROM LDW280-10870			16 3/8 X 29	NONE	NONE	7B
		LDW280-11173-11	E	SHIELD	MAKE FROM LDW280-10870			16 7/8 X 29	NONE	NONE	10A

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
CM	CHEM-MILL ALUM	LSP14-26100
76	ALODINE	LSP14-9010
T42	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11173	C

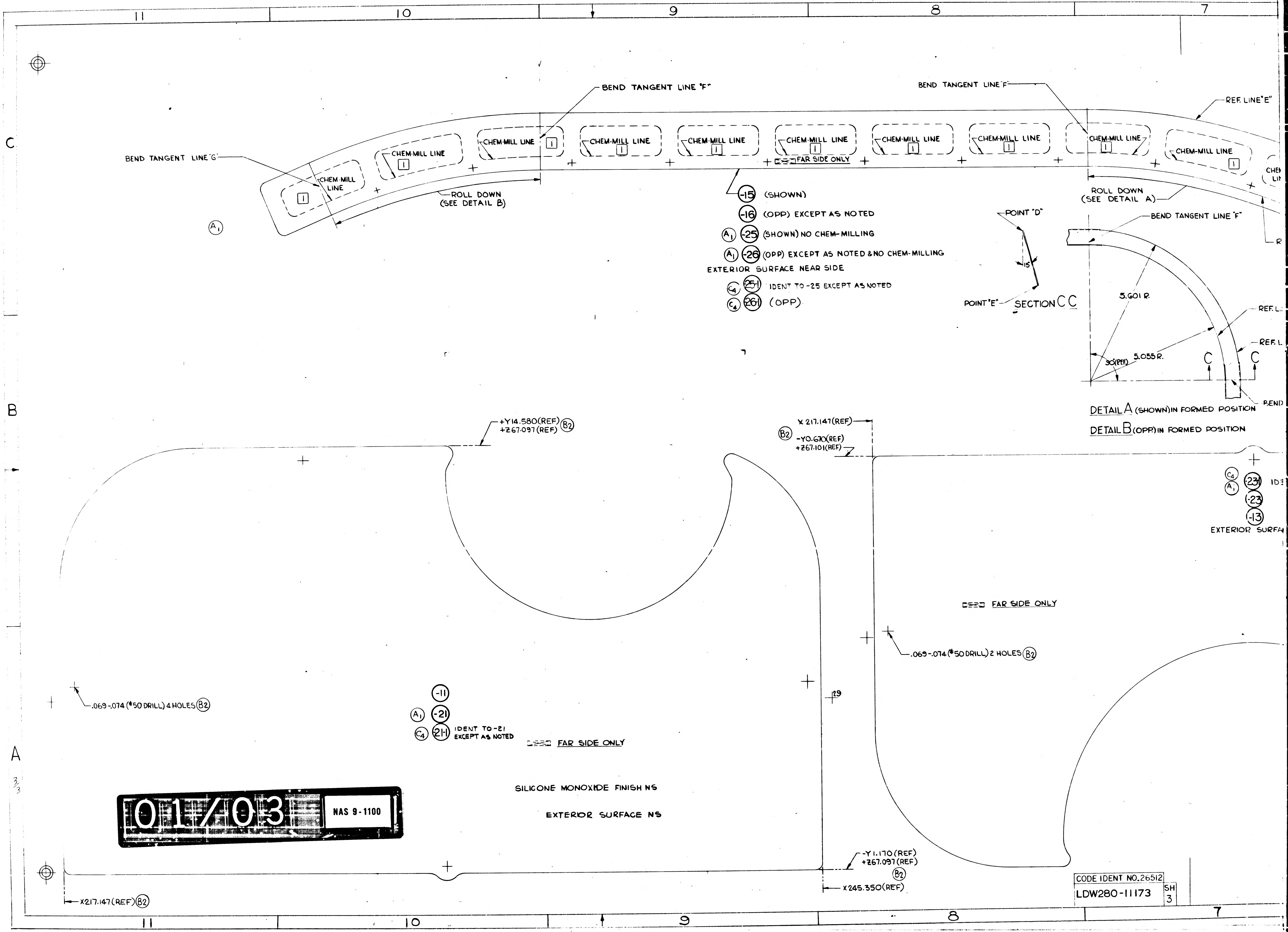
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

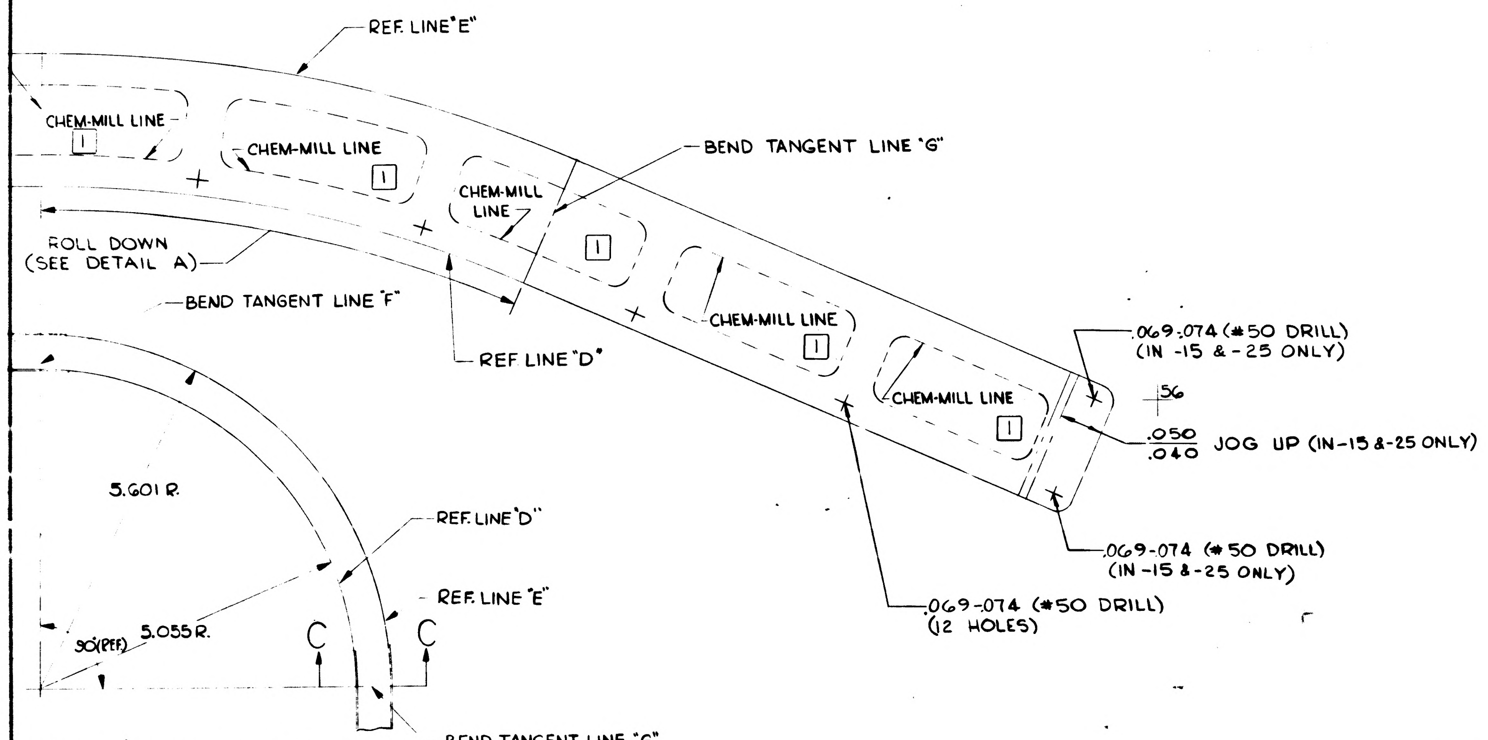
NAS 9-1100



BEND TANGENT LINE "F"
BEND TANGENT LINE "F"
REF. LINE "E"
BEND TANGENT LINE "G"
CHEM-MILL LINE
ROLL DOWN (SEE DETAIL B)
ROLL DOWN (SEE DETAIL A)
FAR SIDE ONLY
-15 (SHOWN)
-16 (OPP) EXCEPT AS NOTED
A1 -25 (SHOWN) NO CHEM-MILLING
A1 -26 (OPP) EXCEPT AS NOTED & NO CHEM-MILLING
EXTERIOR SURFACE NEAR SIDE
C4 -251 IDENT TO -25 EXCEPT AS NOTED
C4 -261 (OPP)
POINT "D"
POINT "E"
15°
SECTION C C
BEND TANGENT LINE "F"
5.601 R.
5.055 R.
90°(REF)
REF. L
REF. L
BEND
C
C
DETAIL A (SHOWN) IN FORMED POSITION
DETAIL B (OPP) IN FORMED POSITION
+Y14.580 (REF)
+Z67.097 (REF) B2
X 217.147 (REF)
B2 -Y0.670 (REF)
+Z67.101 (REF)
C4 -231 IDE
A1 -23
-13
EXTERIOR SURFA
FAR SIDE ONLY
.069-.074 (#50 DRILL) 2 HOLES B2
.069-.074 (#50 DRILL) 4 HOLES B2
-11
A1 -21
C4 -211 IDENT TO -21 EXCEPT AS NOTED
FAR SIDE ONLY
29
SILICONE MONOXIDE FINISH NS
EXTERIOR SURFACE NS
-Y1.170 (REF)
+Z67.097 (REF)
B2
X217.147 (REF) B2
X245.350 (REF)
11
10
9
8
7
C
B
A

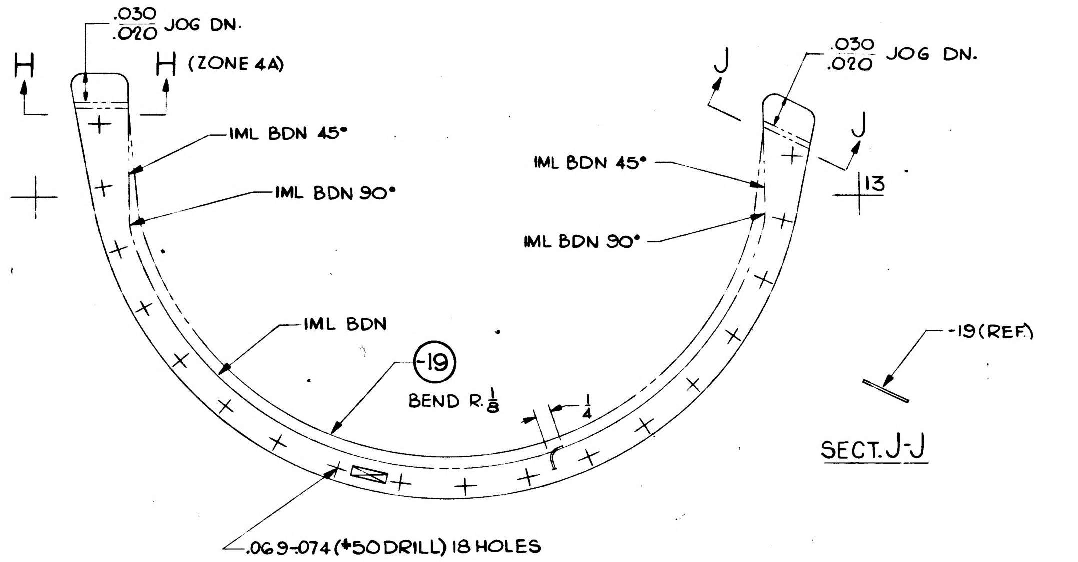
01/03 NAS 9-1100

CODE IDENT NO. 26512
LDW280-11173
SH 3

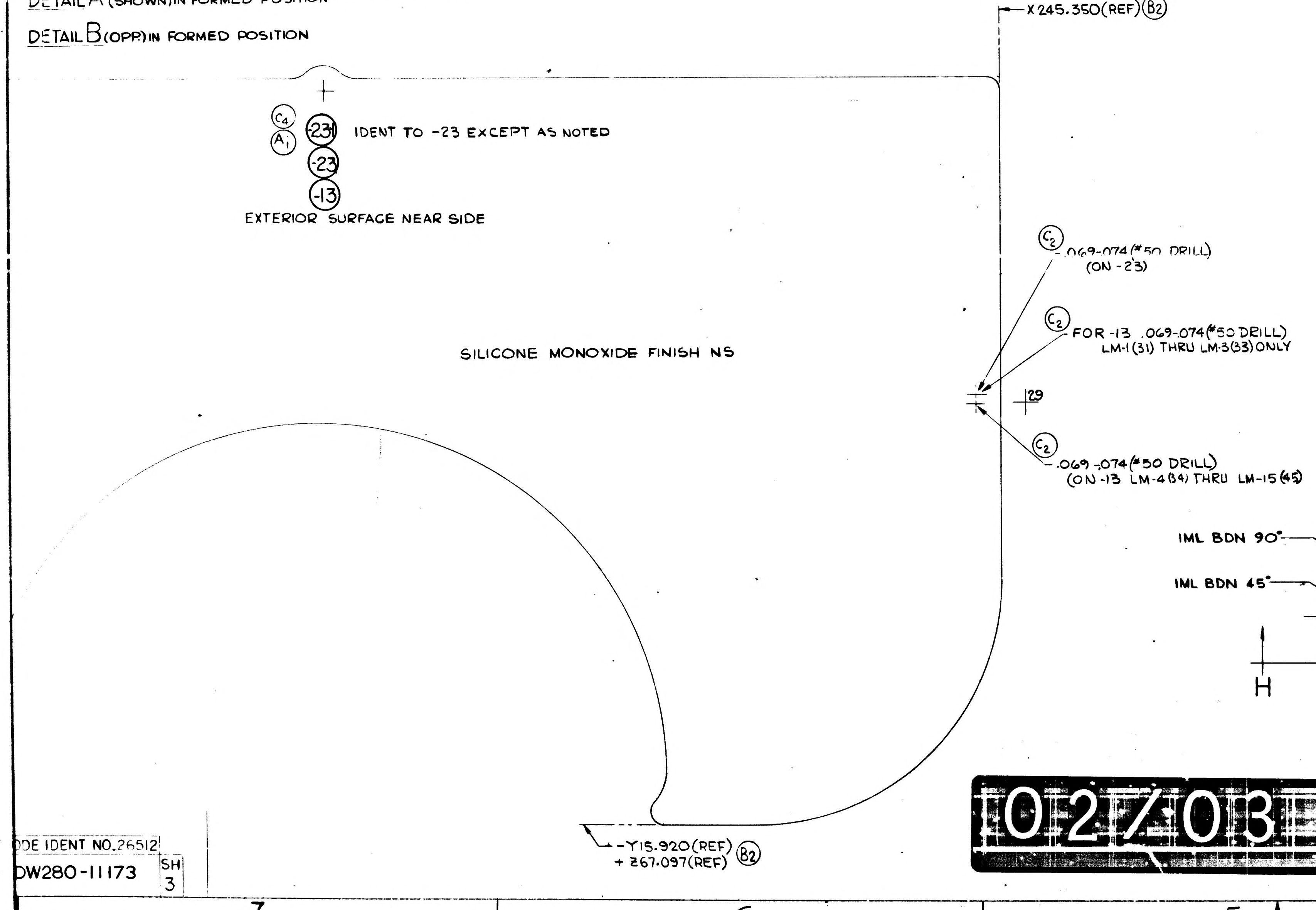

REF. LINE "E"
CHEM-MILL LINE 1
CHEM-MILL LINE 1
CHEM-MILL LINE 1
CHEM-MILL LINE 1
CHEM-MILL LINE 1
BEND TANGENT LINE "G"
ROLL DOWN (SEE DETAIL A)
BEND TANGENT LINE "F"
REF LINE "D"
.069-.074 (#50 DRILL) (IN -15 & -25 ONLY)
.56
.050/.040 JOG UP (IN -15 & -25 ONLY)
.069-.074 (#50 DRILL) (IN -15 & -25 ONLY)
.069-.074 (#50 DRILL) (12 HOLES)
5.601 R.
REF. LINE "D"
REF. LINE "E"
5.055 R.
90°(REF)
C C
BEND TANGENT LINE "G"

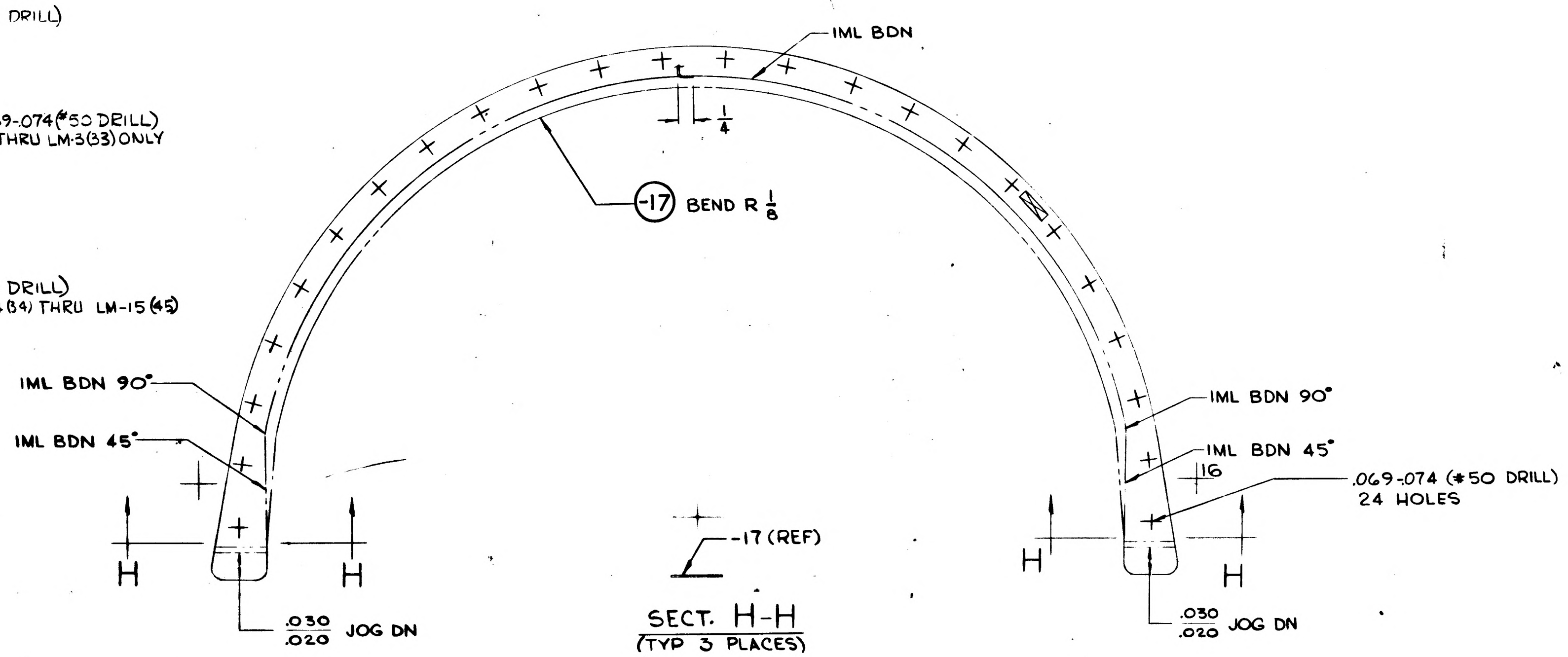
DETAIL A (SHOWN) IN FORMED POSITION

DETAIL B (OPP) IN FORMED POSITION


.030/.020 JOG DN.
H H (ZONE 4A)
IML BDN 45°
IML BDN 90°
IML BDN
-19
BEND R 1/8
1/4
.069-.074 (#50 DRILL) 18 HOLES
J J
.030/.020 JOG DN.
IML BDN 45°
IML BDN 90°
.13
-19 (REF)

SECT. J-J

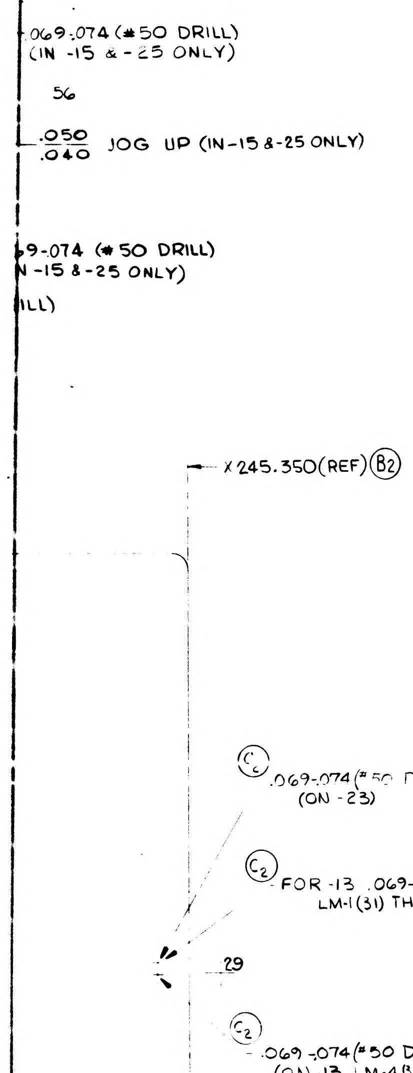

X 245.350 (REF) B2
C4 A1 -231 IDENT TO -23 EXCEPT AS NOTED
-23
-13
EXTERIOR SURFACE NEAR SIDE
C2 .069-.074 (#50 DRILL) (ON -23)
C2 FOR -13 .069-.074 (#50 DRILL) LM-1(31) THRU LM-3(33) ONLY
.29
C2 .069-.074 (#50 DRILL) (ON -13 LM-4(34) THRU LM-15(45))
SILICONE MONOXIDE FINISH NS
-Y15.920 (REF) + Z67.097 (REF) B2

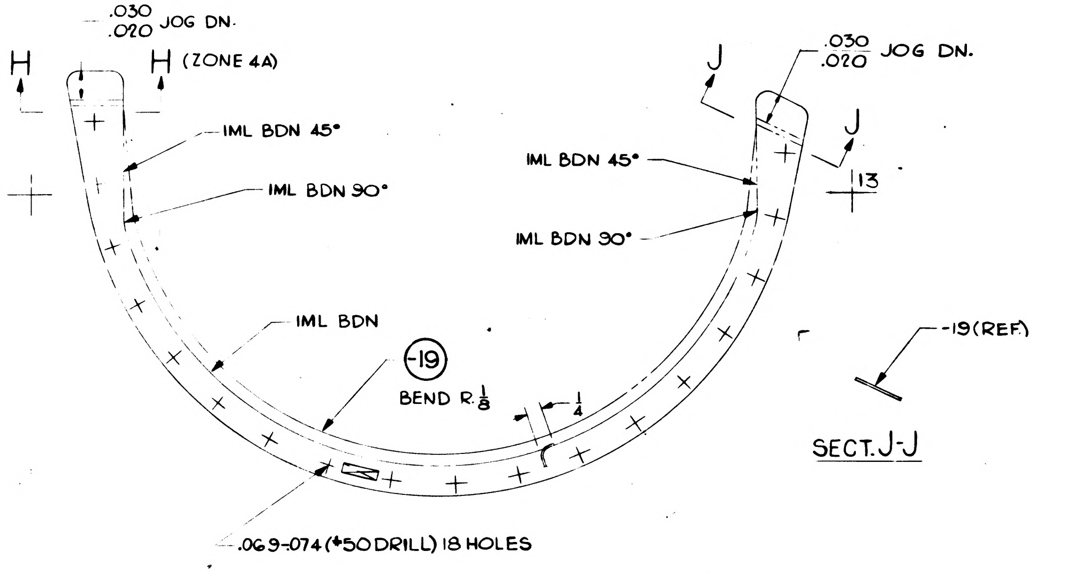

IML BDN
1/4
-17 BEND R 1/8
IML BDN 90°
IML BDN 45°
H H
.030/.020 JOG DN
-17 (REF)
IML BDN 90°
IML BDN 45°
.16
.069-.074 (#50 DRILL) 24 HOLES
H H
.030/.020 JOG DN

SECT. H-H (TYP 3 PLACES)

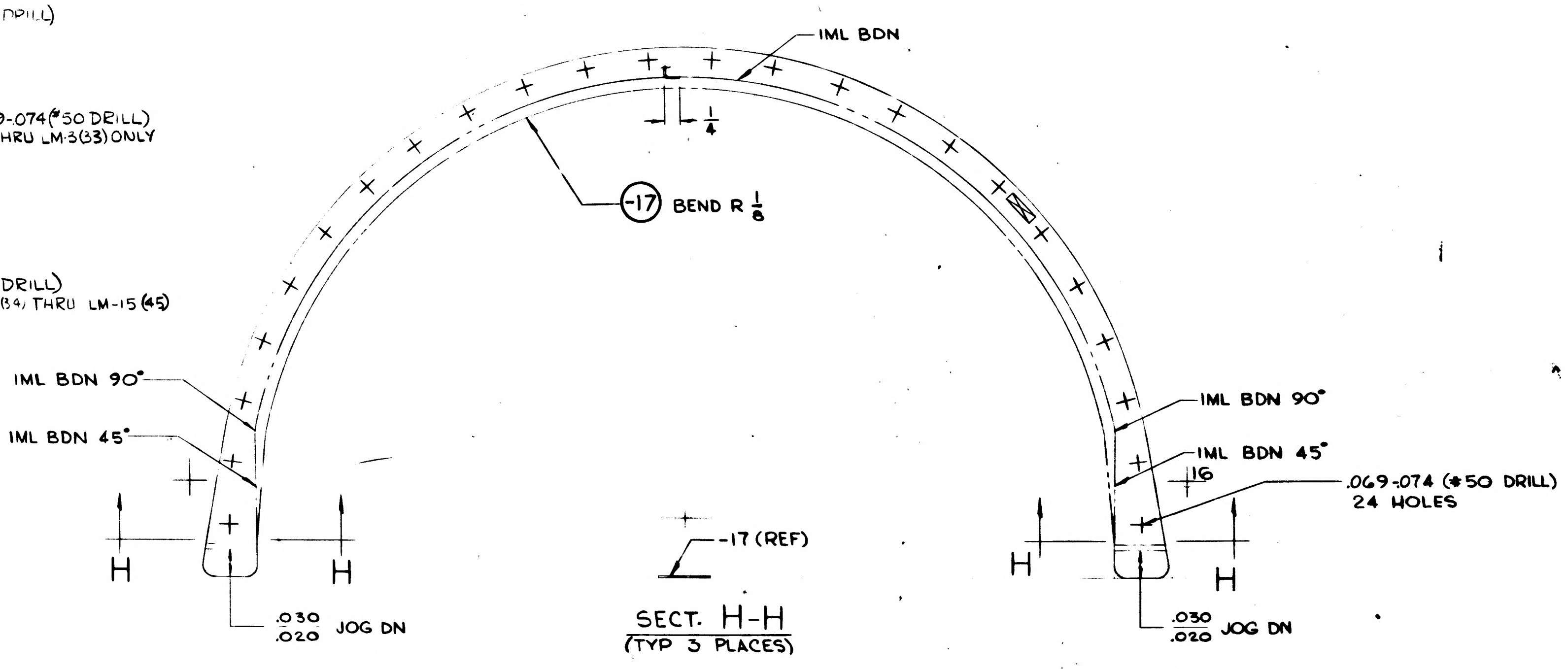
02703 NAS 9-1100

TR EG


.069-.074 (#50 DRILL)
(IN -15 & -25 ONLY)
56
.050/.040 JOG UP (IN-15 & -25 ONLY)
9-.074 (#50 DRILL)
N -15 & -25 ONLY)
ILL)
X 245.350 (REF) (B2)
(C2) .069-.074 (#50 DRILL)
(ON -23)
(C2) FOR -13 .069-.074 (#50 DRILL)
LM-1 (31) THRU LM-3 (33) ONLY
29
(C2) .069-.074 (#50 DRILL)
(ON -13 LM-4 (34) THRU LM-15 (45)


.030/.020 JOG DN.
H
H (ZONE 4A)
J
J
.030/.020 JOG DN.
IML BDN 45°
IML BDN 90°
IML BDN 45°
IML BDN 90°
.13
IML BDN
-19
BEND R 1/8
1/4
-19 (REF)
.069-.074 (#50 DRILL) 18 HOLES

SECT. J-J


IML BDN
1/4
-17
BEND R 1/8
IML BDN 90°
IML BDN 45°
IML BDN 90°
IML BDN 45°
.16
.069-.074 (#50 DRILL)
24 HOLES
-17 (REF)
H
H
H
H
.030/.020 JOG DN
.030/.020 JOG DN

SECT. H-H
(TYP 3 PLACES)

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. MAKE LDW 280-11173-15 & -16 FROM 2024-T3 ALCLAD. BOTH SIDES (SKIN QUALITY). FINISH ALUMALITE 200/R1/EB10 WHICH MAY BE PURCHASED FROM ALUMINUM CO OF AMERICA (CODE IDENT 01634).
3. THE SURFACE DESIGNATED "EXTERIOR" SHALL BE PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROLL PRODUCTS, INC. FARMINGDALE, N.Y.
4. THE INTERIOR SURFACE TO BE CHEM-MILLED IN ACCORDANCE WITH (LSP14-26 100) FINISH ENTIRE SURFACE #76 (LSP14-9010.
5. MATERIAL, FINISHES, HANDLING & PERMISSIBLE DEVIATIONS OF LM ASCENT STAGE THERMAL SHIELD SKINS PER LPC 280-16.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ ~~[illegible]~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 34 X 100

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 17) 29.5 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL)= 7.5 SQ. FT.

PRINT TRIM LINE

C

B

A

03/03 NAS 9-1100

LDW280-11173 C

LDW 280-11173-15 & -16

CHEM-MILL LINE TOLERANCE :
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	$.006^{+.003}_{-.001}$	.014 (REF)

LDW280-11173 C

CODE IDENT NO. 26512
LDW280-11173 SH 3

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
	SIZE J	CODE IDENT NO. 26512	LDW280-11173	C
LEM MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION K2

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENG 32.1 REV 3-65
ENGINEERING ORDER

DWG NO LDW280-11173 | EO NO. D1
CONTROL INFO NO. LDW 280 B 4757

IN FLD OF DWG & B/M

ADD -27 & -29 (SAME AS -11 & -13 EXCEPT FOR MATL CHANGE SHOWN BELOW)
-27 & -29 TO BE MADE FROM .004, 5056-H 191 AL ALLOY SHEET QQ-A-430
IN FINISH BLOCK FOR THIS MATL. (ADD) "SEE NOTE ✱"

(ADD) NOTE ✱
✱ "MATERIAL TO BE PREFINISH PER LE1280-015 SURFACE DESIGNATED "EXTERIOR" TO BE PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROL PRODUCTS INC., FARMINGDALE, N.Y."

IN MODEL BLOCK (RESTRICT) -11, -13, EFF. LM-1 (31) THRU LM-4 & ZERO "G" TEST
(ADD) -27, -29 N/A LDW280-28175 1 EA REQD LM-5 (35) THRU LM-15 (45)

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	✓ LCD 3309 PKG # 1

REASON FOR EO
PLUME HEATING PROTECTION

DESCRIPTION OF EO
IN FLD OF DWG & B/M
ADDED -27 -29. ADDED NOTE ✱ RESTRICTED -11, -13,
ADDED -27 & -29 1 EA ON N/A LDW280-28175 LM5 (35) THRU LM15 (45)

GAEC EO RELEASE (5)

MODEL	~~PROCURING ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM			
		LM-5 (35) THRU	LM-15 (45)

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			✓

APPROVED BY	VDI	THERMO ~~SUPPORT~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
					CL			
DATE	7/22/68	7/22/68		7/19/68	7/23/68		7/24/68	8-7-68

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SHIELD ASCENT STAGE - CABIN HATCH - THERMAL	LDW280-11173	D1

072568
ISSUED BY A. COOKE X 7033 SECTION V.D.I. GROUP NO. 335 PL 25

01

NAS 9-1100

ppr/

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11173
EO NO. D2
CONTROL INFO NO. LDW280B7807

RESTRICT -15 & -16 TO LM-1(31) THRU LM-4(34), ZERO "G" TEST FIXTURE ON N/A LDW280-28175
(WAS) LM-1(31) THRU LM-15(45), ZERO G TEST FIXTURE ON N/A LDW280-28175

LFM

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD 3918 PKG. 11 (5)

REASON FOR EO: ELIMINATE POSS. INTERF. BETWEEN FWD HATCH & LWR FF BULKH'D

DESCRIPTION OF EO: RESTRICT -15 & -16. TO LM-1(31) THRU LM-4(34) ZERO G TEST FIXTURE BY REMOVING LM-5(35) THRU LM-15(45) EFF.

GAEC EO RELEASE: (E) JK 5/9/9

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 416	LM-5(35), LM-6(36) & LM-7(37)	
LM		LM-8(38) THRU	
LM		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO ☐
DISPOSITION OF PARTS: REWORK ☐ SCRAP ✓

APPROVED BY		MR			CL			
DATE	5/2/69	5/8/69		5/6/69	5/8/69		5/8/69	5/8/69
	VDI	THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C
DRAWING TITLE: SHIELD A/S - CABIN - HATCH - THERMAL
DRAWING NO.: LDW280-11173
EO NO.: D2

5-9-69
ISSUED BY H. ISRAEL X86048 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11173
EO NO D3
CONTROL INFO NO. LDW280B 9623

RESTRICT -27&-29 TO LM-5(35) THRU LM-8(38) & LM-15 (45)

WAS EFFECTIVE LM-5(35) THRU LM-15(45)

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD 5384 PKG 10 (5)

REASON FOR EO: FWD HATCH MODIFICATION

DESCRIPTION OF EO: RESTRICTED -27&-29 TO LM-5(35, THRU LM-8(38) AND LM-15(45)

GAEC EO RELEASE 1113
1-16-70
1/19/70

MODEL	EFFECTIVITY PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-9(39)	THRU
LM		LM-14(44)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO ☐
DISPOSITION OF PARTS: REWORK ☐ SCRAP ✓

APPROVED BY		MR			CW			
DATE	1-13-70	1-16-70		1/13/70	1/15/70		1/16/70	1/16/70
	VDI	~~SUPPORT~~ THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONF~~

PRIORITY: C
DRAWING TITLE: SHIELD-ASCENT STAGE-CABIN HATCH-THERMAL
DRAWING NO.: LDW280-11173
EO NO.: D3

011670
ISSUED BY L. BERLINQUETTE X86048 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11174 A

LFM

LFM-126	LDW280-28175	LTA-8(18)	1 EA
LM		ZERO'G' TEST	
LM		LM-15(45)	
		LM-14(44)	
		LM-13(43)	
		LM-12(42)	
		LM-11(41)	
		LM-10(40)	
		LM-9(39)	
		LM-8(38)	
		LM-7(37)	
		LM-6(36)	
		LM-5(35)	
		LM-4(34)	
		LM-3(33)	
		LM-2(32)	
		LM-1(31)	
LM	LDW280-28175	LTA-8(18)	1 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-11174-15,-16		GAEC SCH NO.	

LM	LDW280-28175	ZERO'G' TEST	2 EA
	LDW280-28175	LM-15(45)	
		LM-14(44)	
		LM-13(43)	
		LM-12(42)	
		LM-11(41)	
		LM-10(40)	
		LM-9(39)	
		LM-8(38)	
		LM-7(37)	
		LM-6(36)	
		LM-5(35)	
		LM-4(34)	
LM	LDW280-28175	LM-3(33)	2 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-11174-27 & -28		GAEC SCH NO.	

LM	LDW280-28175	ZERO'G' TEST	2 EA
	LDW280-28175	LM-15(45)	
		LM-14(44)	
		LM-13(43)	
		LM-12(42)	
		LM-11(41)	
		LM-10(40)	
		LM-9(39)	
		LM-8(38)	
		LM-7(37)	
		LM-6(36)	
		LM-5(35)	
		LM-4(34)	
		LM-3(33)	
		LM-2(32)	
		LM-1(31)	
LM	LDW280-28175	LTA-8(18)	2 EA

PART NO. LDW 280-11174-25 & -26

LM	LDW280-28175	LM-2(32)	2 EA
LM	LDW280-28175	LM-1(31)	2 EA
LM	LDW280-28175	LTA-8(18)	2 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-11174-21 & -22		GAEC SCH NO. 30-	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET	1.01								
REV	A								
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A		
LAST DASH NO. USED	-28	PRIM NO.	JK(001)	
		215	MP-16	A-5/22/68

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100 | LINE ITEM 1 | DOCUMENTATION TYPE II

DRAWN BY	I. Scott 5-19-66	RELIABILITY	—
LAYOUT BY	DI JENNARO/SAL 5-27-66		
CHECKED BY	EG 5-25-66		
GR LEADER	J. Pusateri 5/27/66		
VEH DES INT	Paulson 5-27		
STRUCTURES	5/31	PROJ ENGR	Plunkett 13 June 66
STRUCTURES	Hilderman 6/1	REL GROUP	Caramanico 6-16
WEIGHT	6/10		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE-CABIN-
THERMAL SHIELD-HATCH

SIZE	CODE IDENT NO.		
B	26512	LDW280-11174	A
SCALE NONE		SHEET 1.00 OF 5	

ENG 77.1 12-65

REV "A" CDR 5-8-68

01
NAS 9-1100

LDW280-11174 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28175	ZERO "G" TEST	1
		LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
		LM-4(34)	1
		LM-3(33)	1
		LM-2(32)	1
		LM-1(31)	1
LM	LDW280-28175	LTA-8(18)	1

PART NO. LDW280-11174-23

GAEC SCH NO.

SH REV STATUS- FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET									
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO USED

GRUMMAN REL INFO

PRIM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED

FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO.

LINE ITEM

DOCUMENTATION TYPE

DRAWN BY

LAYOUT BY

CHECKED BY

PROJ ENGR

REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11174	A
SCALE	NONE	SHEET 1.01	OF

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00,1.10, 2.00,3.00						EO-A1	IN FLD, B/M & MOD/BLK CREATED LDW280-11174-16 ANGLE. ADDED SH 1.10.	LTA-8 LM-1 LM-2	✓		T. KRONCKE 2-1-68		
	2	1.00,2.00, 3.00						EO-A2	IN FLD, B/M & MOD/BLK REMOVED -11,-12-13 & -14 N/A LDW280-28175 (2)REQD/MOD EFF LTA-8(18) LM-1(31), LM-2-(32). REMOVED -17 N/A LDW280-28175 (1)REQD/MOD EFF LTA-8(18), LM-1(31) & LM-2(32). ADDED -19,-20,21,-22 N/A LDW-280-28175(2) REQD/MOD EFF LTA-8(18), LM-1(31) & LM-2(32). ADDED -23 N/A LDW280-28175 (1)REQD/MOD EFF LTA-8(13), LM-1(31) & LM-2(32)			-11 -12 -13 -14 -17			
	3	3.00						EO-A3	TRIMMED -19 & -20		✓				
	4	1.00,2.00, 3.00						EO-A4	REMOVED -19 & -20. ADDED -25 & -26			✓			
	5	1.00						EO-A5	FOR -15,-16,-21,-22,-23,-25 & -26 ADDED LM-3 THRU LM-15 EFFECTIVITY	LM-3 THRU LM-15	NOT	REQD			
	6	1.00,2.00, 3.00					✓	EO-A6	ADDED -27 & -28. FROM -21 & -22 MOD/BLK REMOVED LM-3 THRU LM-15 REQUIREMENTS			✓			
	7	1.00				✓		LEO280-727 LCD1367 CCA-547	ON -15-16,-23,-25,-26,-27 & -28 ADDED "ZERO G" REQUIREMENTS	ZERO G TEST	NOT	REQD			
	8	3.00					✓	EO-A8	IN FLD REVISED TRIM OF -15 & -16	LM-2 THRU LM-15	✓			L.D.	5-22-68
	9	1.00,1.01, 1.10		LFM-126		✓		LCD1021-33 O.K.	ON -15 & -16 ADDED END ITEM LFM 126 REQ'MTS.	LTA-8(9	NOT	REQD	MARKARIAN 4-20-68	[illegible]	[illegible]

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCT	STRUCT	WEIGHT	RELIABILITY	THERMO
	A	FNR 4/30	[illegible] 5/1/68	[illegible] 5/3/68				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11174	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11174-28	E	CLIP	AL ALLOY SH	QQ-A-250/4	2024	.050 x 2 x 3	T3	88	
		-27						.050 x 2 x 3	T3	88	
		-26						.050 x 2 x 3	T42	88	
		-25						.050 x 2 x 3	T42	88	
		-23						.050 x 3 x 3	T3	88	
		-22						.050 x 2 x 3	T3	88	
		-21		CLIP				.050 x 2 x 3	T3	88	
		-16		ANGLE				.020 x 2 x 57	T3/T42	76	
		LDW280-11174-15	E	ANGLE	AL ALLOY SH	QQ-A-250/4	2024	.020 x 2 x 57	T3/T42	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						76	ALODINE	LSP14-9010
						T-42	HEAT TREAT	MIL H-6088
						T-3	HEAT TREAT	MIL H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11174	A

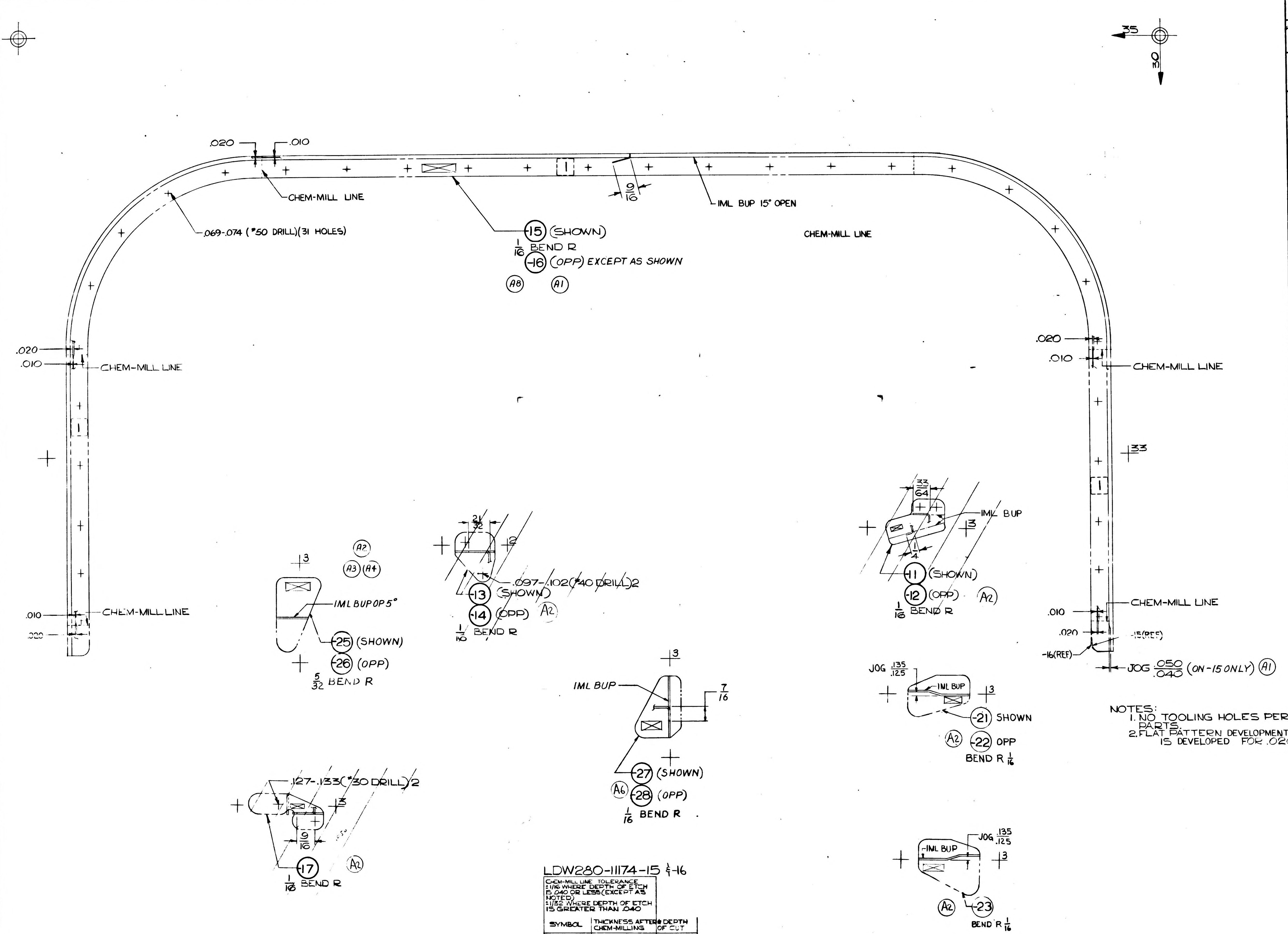
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



8
7
6
5
4
3
2
1
35
30
.020
.010
CHEM-MILL LINE
.069-.074 (#50 DRILL)(31 HOLES)
-15 (SHOWN)
1/16 BEND R
-16 (OPP) EXCEPT AS SHOWN
A8
A1
9/16
IML BUP 15° OPEN
CHEM-MILL LINE
.020
.010
CHEM-MILL LINE
.010
.020
CHEM-MILL LINE
33
IML BUP
3
33/64
1/4
-11 (SHOWN)
-12 (OPP)
A2
1/16 BEND R
A2
A3
A4
3
IML BUP OP 5°
-25 (SHOWN)
-26 (OPP)
5/32 BEND R
21/32
12
.097-.102(#40 DRILL)2
-13 (SHOWN)
-14 (OPP)
A2
1/16 BEND R
.010
.020
CHEM-MILL LINE
-15(REF)
-16(REF)
JOG .050/.040 (ON -15 ONLY) A1
3
IML BUP
7/16
-27 (SHOWN)
A6
-28 (OPP)
1/16 BEND R
JOG .135/.125
IML BUP
3
-21 SHOWN
A2
-22 OPP
BEND R 1/16
.127-.133(#30 DRILL)2
3
9/16
-17
A2
1/16 BEND R
JOG .135/.125
IML BUP
3
A2
-23
BEND R 1/16

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. FLAT PATTERN DEVELOPMENT FOR -15 & -16 IS DEVELOPED FOR .020 THICKNESS.

LDW280-11174-15 & -16

CHEM-MILL LINE TOLERANCE
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	.010 $^{+.005}_{-.000}$	.010 REF
☐		
☐		

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN TO .0005 MAX MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD 10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ±1/32	✓

01

NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
	SIZE	CODE IDENT NO.		
LEM	E	26512	LDW280-11174	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

ENG 73-4 6-64

2 FOR PHOTO REPRODUCTION 1 K2

AAP

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11174		EO NO. B1
CONTROL INFO NO. LDW280B7808		

RESTRICT -15 & -16 TO LTA-8(18), LM-1(31) THRU LM-4(34)
ZERO G TEST, LFM-126 LTA-8(18) ON N/A
LDW280-28175
(WAS) LTA-8(18), LM-1(31) THRU LM-15(45), ZERO G TEST,
LFM-126 LTA8(18) ON N/A
LDW280-28175

LFM

DETAIL SPEC REQ		CI II ENGRG CHG		CL I ENGRG CHG	✓ LCD 3918 PKG 11	(5)

REASON FOR EO: ELIMINATE POSS. INTERF. BETWEEN FWD HATCH & LWR F.F. BULKH'D

DESCRIPTION OF EO: RESTRICT -15 & -16 TO LTA-8(18), LM-1(31) THRU LM-4(34) ZERO G TEST, LFM 126 LTA-8(18) BY REMOVING LM-5(35) THRU LM-15(45) EFF.

GAEC EO RELEASE: (E) JK 5/8/69

MODEL	EFFECTIVITY ~~PROCURING ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 416	LM-5(35), LM6(36) & LM-7(37)	
LM		LM-8(38) THRU	
LM		LM-15(45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓			✓
REVISE DWG	RECORD EO	REWORK	SCRAP

APPROVED BY		MMR			CL			
DATE	5/2/69	5/8/69		5/6/69	5/8/69		5/2/69	5/8/69
	VDI	THERMO	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	ANGLE A/S-CABIN-THERMAL SHIELD-HATCH	LDW280-11174	B1

5-9-69
ISSUED BY H. ISRAEL X86048 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED NO CHANGE LAST REV NO CHANGE SH1.00 OF4 WAS 1OF1 LOFTED DWG WAS DIMENSIONED	E. SIC	K 7-	23-66		RVP 8-2-66	
A	1	1.00, 1.10,						EO A1	ADDED -23 & -24 RESTRICTED -15 & -16 TO LTA-8, LEM 1 & 2	LTA-3 & -8	✓		E.SICK		
	2	2.00 & 3.00						EO A2	ADDED -19, -20, -21 & -22 RESTRICTED -11, -12, -13 & -14 EFF WAS LTA-3 & -8 LEM-1 THRU-6	LEM-1 THRU-6		✓	7-23-66 EG		
	3	1.00, 1.10							ADDED LEM-7 THRU-15 EFF, 1 REQD/MOD. -17 THRU -24	LEM-7 THRU-15	NOT	REQD	JAEGGI 7-25-66		

CHG APPROVED										
LTR	GROUP LDR	VEH DESINT	STRUCTURE	STRUCTURE	WEIGHTS					
A										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11176	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11176-24	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.032×3⅛×3⅝	NONE	88	
		-23						.032×3⅛×3⅝			
		-22						.032×5½×9⅜			
		-21						.032×5½×9⅜			
		-20						.032×4⅜×9⅜			
		-19						.032×4⅜×9⅜			
		-18						.032×4×4¼			
		-17						.032×4×4¼			
		-16						.032×3⅛×3⅝			
		-15						.032×3⅛×3⅝			
		-14						.032×5⅜×9⅝			
		-13						.032×5⅜×9⅝			
		-12						.032×4⅛×9⅝			
		LDW280-11176-11	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.032×4⅛×9⅝	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11176	A

SCALE NONE

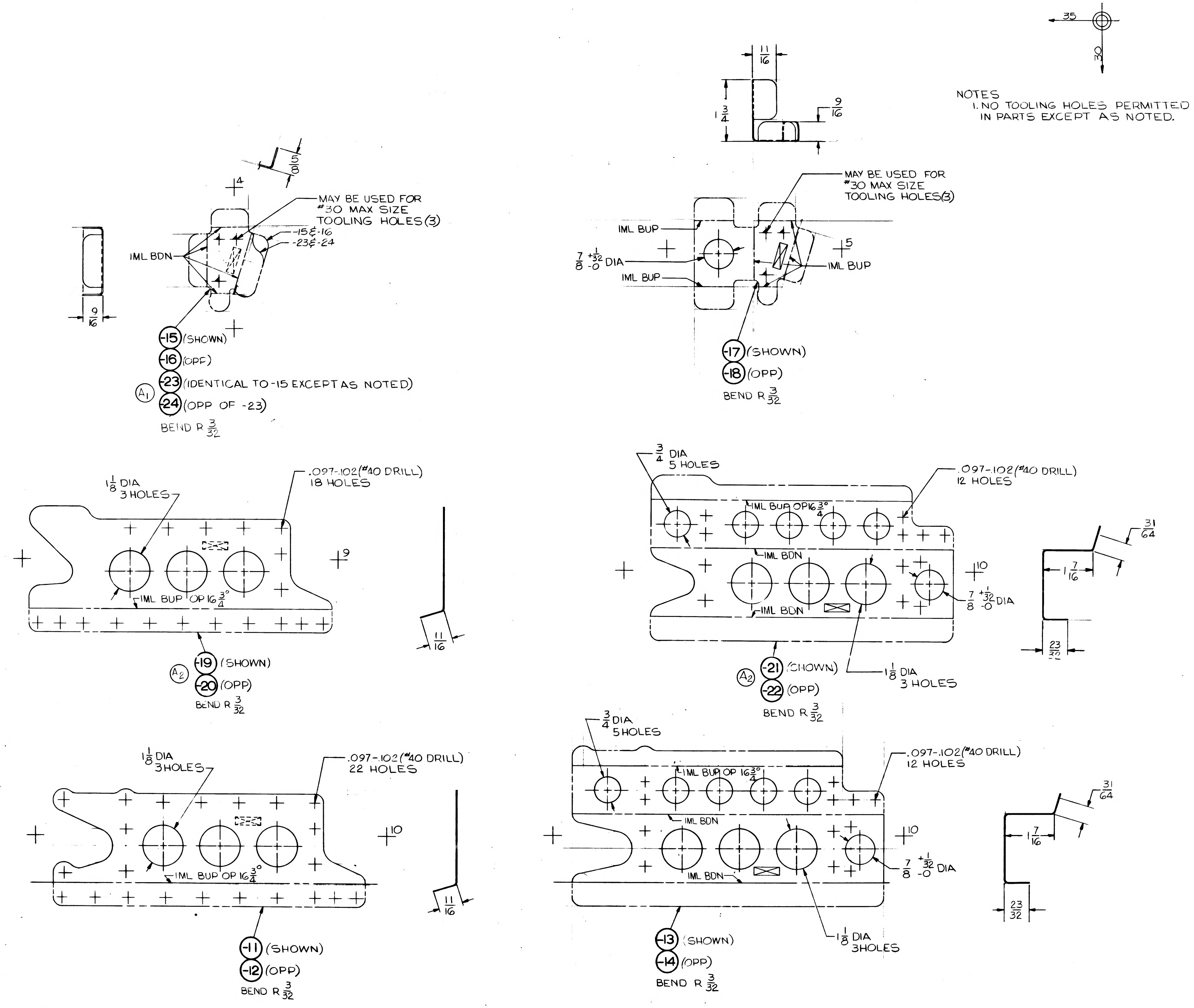
SHEET 2 [illegible]

ENG 77.2 7-65

01

NAS 9-1100

NOTES
1. NO TOOLING HOLES PERMITTED IN PARTS EXCEPT AS NOTED.



35
30
11/16
1 3/4
9/16
MAY BE USED FOR #30 MAX SIZE TOOLING HOLES(3)
IML BUP
7/8 +1/32 -0 DIA
IML BUP
+5
IML BUP
-17 (SHOWN)
-18 (OPP)
BEND R 3/32
5/16
+4
MAY BE USED FOR #30 MAX SIZE TOOLING HOLES(3)
-15 & -16
-23 & -24
IML BDN
9/16
-15 (SHOWN)
-16 (OPP)
A1
-23 (IDENTICAL TO -15 EXCEPT AS NOTED)
-24 (OPP OF -23)
BEND R 3/32
1 1/8 DIA 3 HOLES
.097-.102 (#40 DRILL) 18 HOLES
+9
IML BUP OP 16 3/4°
11/16
A2
-19 (SHOWN)
-20 (OPP)
BEND R 3/32
3/4 DIA 5 HOLES
.097-.102 (#40 DRILL) 12 HOLES
IML BUP OP 16 3/4°
IML BDN
+10
7/8 +1/32 -0 DIA
IML BDN
31/64
1 7/16
23/32
A2
-21 (SHOWN)
-22 (OPP)
BEND R 3/32
1 1/8 DIA 3 HOLES
1 1/8 DIA 3 HOLES
.097-.102 (#40 DRILL) 22 HOLES
+10
IML BUP OP 16 3/4°
11/16
-11 (SHOWN)
-12 (OPP)
BEND R 3/32
3/4 DIA 5 HOLES
IML BUP OP 16 3/4°
.097-.102 (#40 DRILL) 12 HOLES
IML BDN
+10
7/8 +1/32 -0 DIA
IML BDN
31/64
1 7/16
23/32
-13 (SHOWN)
-14 (OPP)
BEND R 3/32
1 1/8 DIA 3 HOLES

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

01
NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK
EM
MODEL OR END ITEM
SIZE E
CODE IDENT NO. 26512
LDW280-11176
A
SCALE
SHEET

FOR PHOTO REPRODUCTION

LDW280-11176 A

LDW280-11176 A

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER *

DWG. NO. LDW280-11176		EO NO. B1	
CONTROL INFO NO. LDW280A 7596			

REMOVE LM-3 THRU LM-15 EFFECTIVITY FROM DRAWING

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 1426 CCA 580 5

REASON FOR EO	DESCRIPTION OF EO	Ⓡ GAEC C EO RELEASE
ADDITION OF (4) RCS INTERCONNECT VALVES (LCD 1426)	REMOVED LM-3 THRU LM-15 EFFECTIVITY FROM DRAWING.	JK 6/26/67

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3 (33)	
		THRU	
LM		LM-15 (45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
✓			✓	DATE	6/23/67			6/23/67	6/24/67		6/24	6-26-67
REVISE DWG	RECORD EO	REWORK	SCRAP		VDI	~~SUPPORT~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP P.J.C.	LIAISON ENGRG	PROJ ENGRG	~~[illegible]~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	BRACKET A/S-M/S--Z27 BULKHEAD BLEED DISCON.	LDW280-11176	B1

ISSUED BY D. KLINGENER X1392 SECTION VDI GROUP NO. 335 PL 25

01 NAS 9-1100

LDW280-11177 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28051	LEM-2(32)	1EA
LEM	LDW280-28051	LEM-1(31)	1EA
LEM	LDW280-28051	LTA-8(18)	1EA
PART NO. LDW280-11177-1,-3,-5&-7		GAEC SCH NO. 31-3	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A		
		PRIM NO.	FR(001)	
LAST DASH NO. USED	-25	215	MP 7/21/66 A	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM I
DOCUMENTATION TYPE II

DRAWN BY	J.CALANDRA 5-6		
LAYOUT BY	J.CALANDRA 5-6		
CHECKED BY			
GR LEADER	J.PUSATERI 5-7		
VEH DES INT	W.BISCHOFF 5-10		
STRUCTURES	HILDERMAN 5-11	PROJ ENGR	J.ALBER 5-16
WEIGHTS	D.ROBESCH 5-16	REL GROUP	CARAMANICA 5-19

® GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET ASSY
ASCENT STAGE- CABIN-EQUIPMENT LINES

SIZE	CODE IDENT NO.		
B	26512	LDW280-11177	A
SCALE NONE		SHEET 1.00 OF 4	

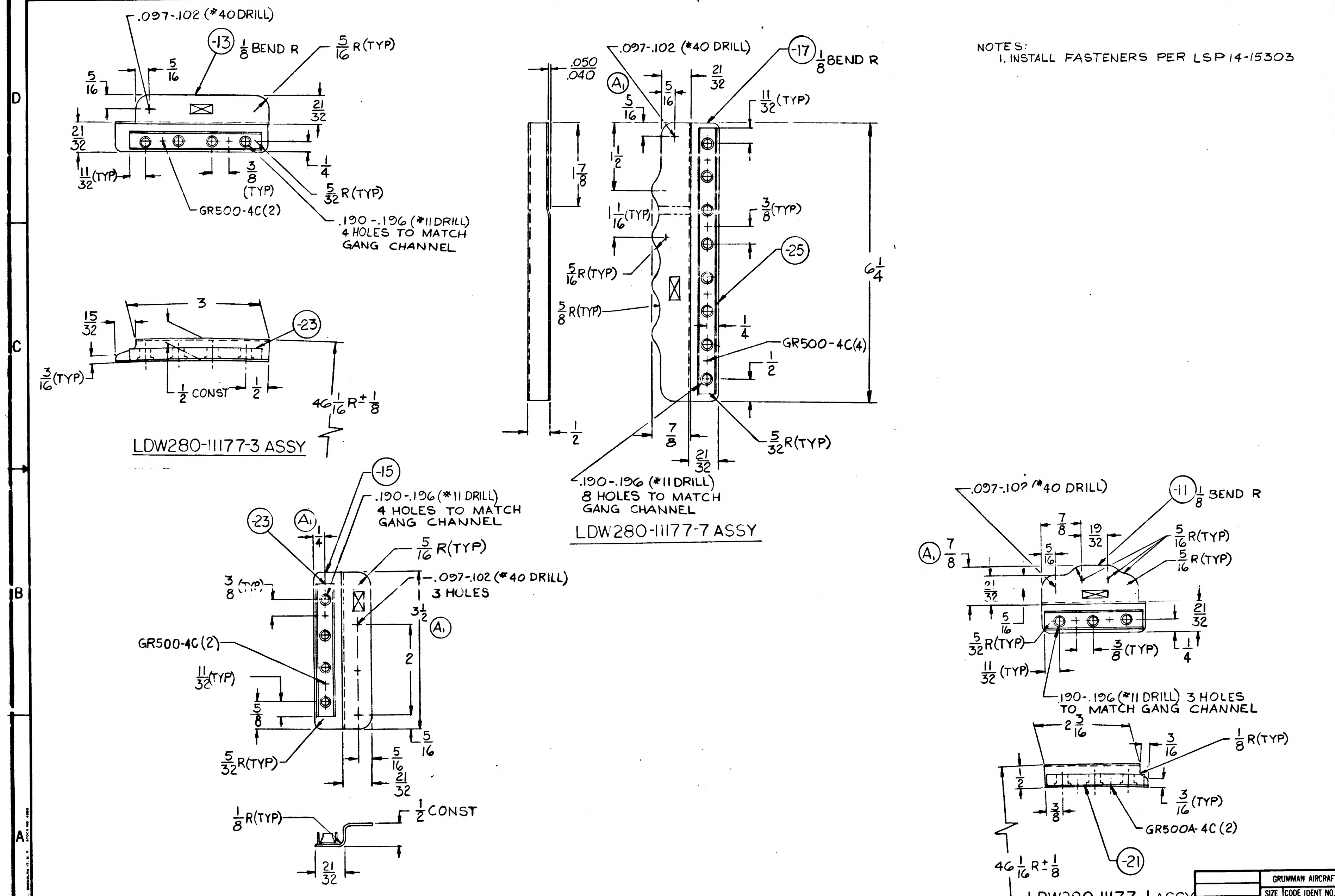
ENG 77.1 12-65

SUPERSEDES LDW280-11177 NO CHANGE 7-11-66

01

NAS 9-1100

LDW280-11177 A



.097-.102 (#40 DRILL)
-13
1/8 BEND R
5/16 R (TYP)
5/16
5/16
21/32
21/32
11/32 (TYP)
3/8 (TYP)
1/4
5/32 R (TYP)
GR500-4C(2)
.190-.196 (#11 DRILL) 4 HOLES TO MATCH GANG CHANNEL
15/32
3
-23
3/16 (TYP)
1/2 CONST
1/2
46 1/16 R ± 1/8
.050
.040
.097-.102 (#40 DRILL)
-17
1/8 BEND R
A1
5/16
5/16
21/32
11/32 (TYP)
1 7/8
1 1/2
1 1/16 (TYP)
3/8 (TYP)
-25
5/16 R (TYP)
5/8 R (TYP)
6 1/4
1/4
GR500-4C(4)
1/2
1/2
7/8
21/32
5/32 R (TYP)
.190-.196 (#11 DRILL) 8 HOLES TO MATCH GANG CHANNEL
-15
-23
A1
.190-.196 (#11 DRILL) 4 HOLES TO MATCH GANG CHANNEL
1/4
5/16 R (TYP)
.097-.102 (#40 DRILL) 3 HOLES
3/8 (TYP)
3 1/2
A1
GR500-4C(2)
2
11/32 (TYP)
5/8
5/32 R (TYP)
5/16
5/16
21/32
1/8 R (TYP)
1/2 CONST
21/32
.097-.102 (#40 DRILL)
-11
1/8 BEND R
A1
7/8
7/8
19/32
5/16
5/16 R (TYP)
5/16 R (TYP)
21/32
5/16
5/32 R (TYP)
21/32
3/8 (TYP)
1/4
11/32 (TYP)
.190-.196 (#11 DRILL) 3 HOLES TO MATCH GANG CHANNEL
2 3/16
3/16
1/8 R (TYP)
1/2
3/8
3/16 (TYP)
GR500A-4C (2)
-21
46 1/16 R ± 1/8

LDW280-11177-3 ASSY

LDW280-11177-7 ASSY

LDW280-11177-5 ASSY

LDW280-11177-1 ASSY

NOTES:
1. INSTALL FASTENERS PER LSP 14-15303

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	✓
TOLERANCE ON LOFTED DELINEATIONS IS	

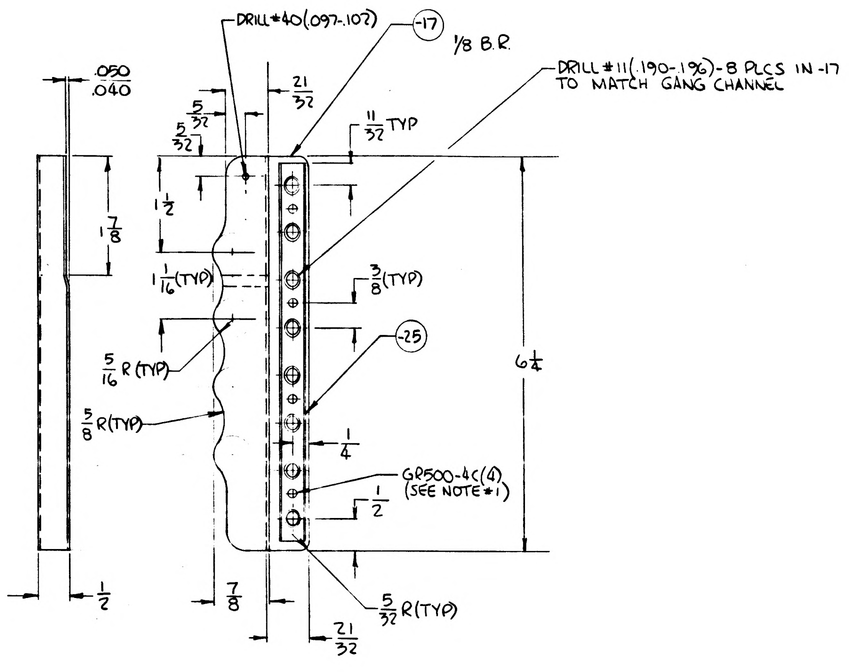
GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

LEM	SIZE D	CODE IDENT NO. 26512	LDW280-11177	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

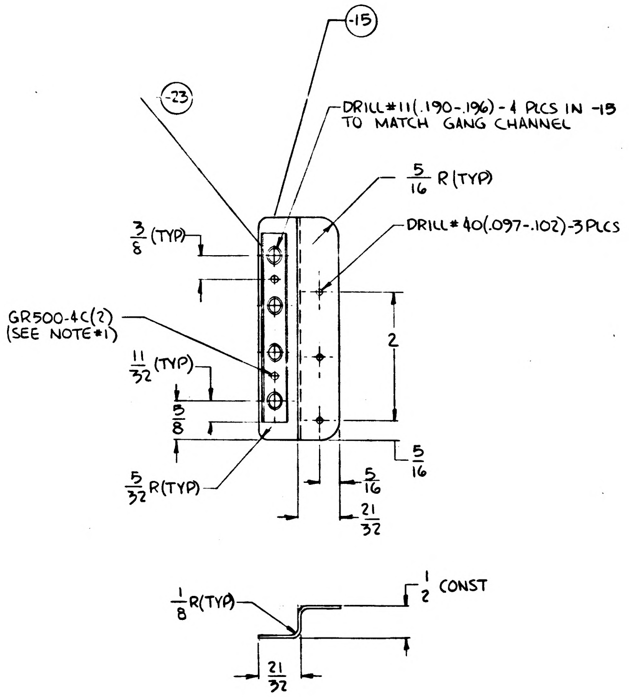
LDW280-11177 A

ENG 73-3 6-64

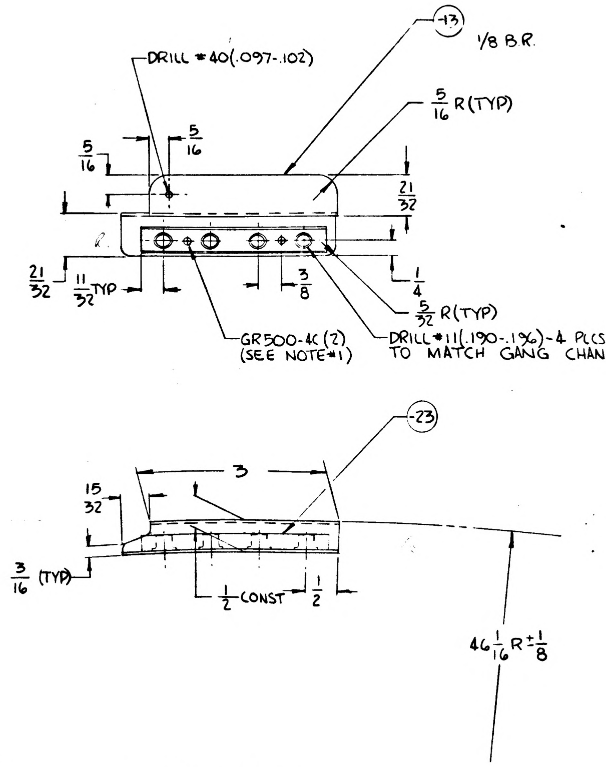
01 NAS 9-1100


DRILL #40 (.097-.102)
-17
1/8 B.R.
DRILL #11 (.190-.196) - 8 PLCS IN -17 TO MATCH GANG CHANNEL
.050 .040
21/32
5/32
5/32
11/32 TYP
1 1/2
1 7/8
1 1/16 (TYP)
3/8 (TYP)
-25
6 1/4
5/16 R (TYP)
5/8 R (TYP)
1/4
GR500-4C (4) (SEE NOTE #1)
1/2
1/2
7/8
5/32 R (TYP)
21/32

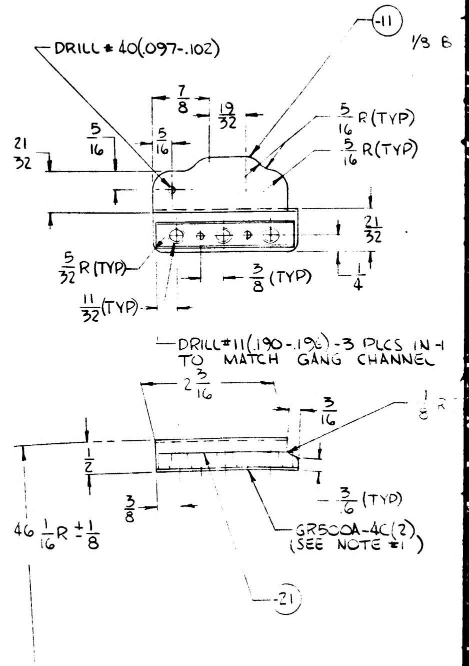
LDW280-11177-7


-15
-23
DRILL #11 (.190-.196) - 4 PLCS IN -15 TO MATCH GANG CHANNEL
5/16 R (TYP)
DRILL # 40 (.097-.102) - 3 PLCS
3/8 (TYP)
GR500-4C (2) (SEE NOTE #1)
11/32 (TYP)
2
3/8
5/16
5/32 R (TYP)
5/16
21/32
1/8 R (TYP)
1/2 CONST
21/32

LDW280-11177-5


-13
1/8 B.R.
DRILL #40 (.097-.102)
5/16 R (TYP)
5/16
5/16
21/32
21/32
11/32 TYP
3/8
1/4
5/32 R (TYP)
GR500-4C (2) (SEE NOTE #1)
DRILL #11 (.190-.196) - 4 PLCS IN -13 TO MATCH GANG CHANNEL
-23
3
15/32
3/16 (TYP)
1/2 CONST
1/2
46 1/16 R ± 1/8

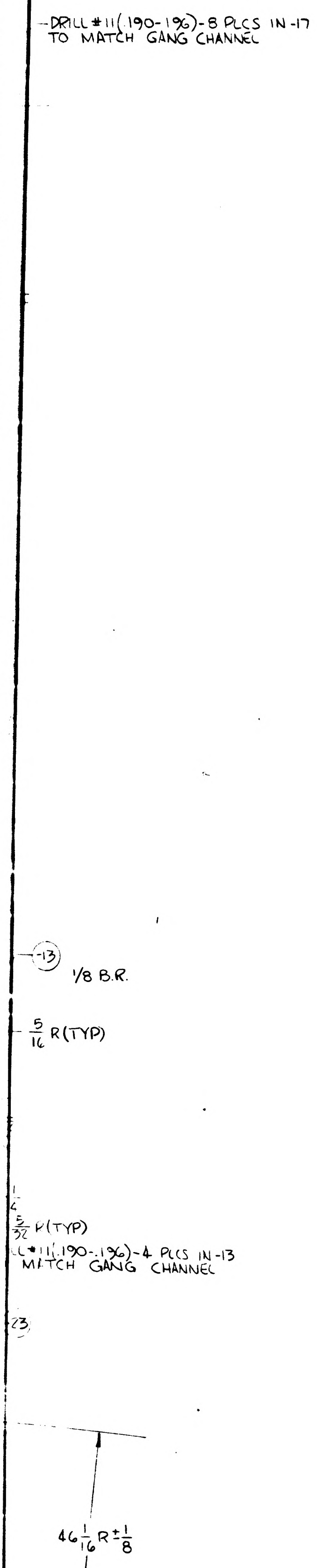
LDW280-11177-3

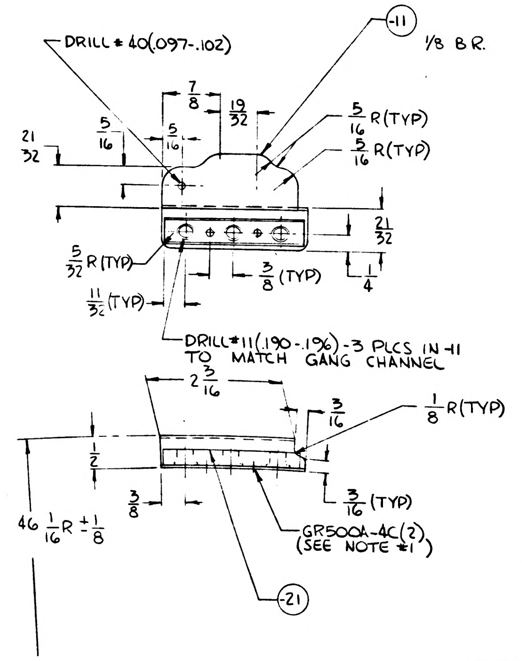

DRILL # 40 (.097-.102)
-11
1/8 B
7/8
19/32
5/16 R (TYP)
5/16 R (TYP)
21/32
5/16
5/16
21/32
5/32 R (TYP)
3/8 (TYP)
1/4
11/32 (TYP)
DRILL #11 (.190-.196) - 3 PLCS IN -1 TO MATCH GANG CHANNEL
2 3/16
3/16
1/8 R
1/2
3/8
3/16 (TYP)
46 1/16 R ± 1/8
GR500A-4C (2) (SEE NOTE #1)
-21

LDW280-11177 -1

2/2

01/02 NAS 9-1100





LDW280-11177 -1

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	~~G. S. S.~~	LSP14-9030

RECORD DRAWINGS AND E.O.'S				
MODEL	RECORD DWG NO.	E. O. NO.	MILITARY NO.	APL NO.

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
T42	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PS1 ROCKWELL C TO C		

MANUFACTURING OPERATIONS	
NOTES CHECKED √ APPLY TO THIS DWG.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.	
200√ FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
RUBBER STAMP PART NUMBER ~~AND ALL OTHER MARKINGS IN REGION MARKED~~ ~~USE BOTH SIDES IF NECESSARY~~.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ∫ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	

REVISIONS												
REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY / DCRF OR ECP	CLASS II	CLASS I / SYST SPEC REQD	ENGRG ORDER / IBCC NO.	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MILITARY NUMBER	DISPOSITION OF EXIST PARTS: RE-WORK	SCRAP	GOVT APPD

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X) SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) SQ. FT.
DWG. SIZE 34 X
PRINT THIS LINE

NOTES
1. INSTALL GR500A-4C IN ACCORDANCE WITH LSP14-15303

OBSOLETE REDRAWN
7-11-66

-7	-5	-3	-1	PART OR IDENTIFYING NO.	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE
4	2	2	2	GR500A-4C	E	RIVET	GRUMMAN STD							
1				-25		GANG CHANNEL	NAS688P-6-8			LEN=6				
	1	1		-23		GANG CHANNEL	NAS688P-6-4			LEN=3				
			1	-21		GANG CHANNEL	NAS688P-6-3			LEN=2 1/4				
1				-17		BRACKET	AL. ALLOY	QQ-A-355	2024	.040 x 2 1/2 x 6 1/2	T3/42	88		
	1			-15					2024-T3	.040 x 2 1/2 x 4	NONE			
		1		-13					2024-T3	.040 x 2 1/2 x 4 1/4	NONE			
			1	-11		BRACKET	AL ALLOY	QQ-A-355	2024-T3	.040 x 2 1/2 x 3	NONE	88		
				-7		BRACKET ASSY								
				-5										
				-3										
				LDW280-11177-1	E	BRACKET ASSY								

QTY REQD PER ASSY

TO BE REDRAWN ON PRODUCTION FORMAT

(5)

MODEL	NEXT ASSY	MODULE ~~MILITARY~~ NUMBER	~~APL NO.~~	REQD PER APL
LEM	LDW280-28051	LEM-2(32)		1EA
LEM	LDW280-28051	LEM-1(31)		1EA
LEM	LDW280-28051	LTA-8(18)		1EA

PART NUMBER LDW280-11177-1,-3,-5 & -7
GRUMMAN SCH INFO 313

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED: FRACTIONS - DECIMALS - ANGLES
± 1/32 ± .020 ± 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	
GRUMMAN REL INFO	
PRIM No. 215	MP12

DRAWN BY	J.CALANDRA 5-6
LAYOUT BY	J.CALANDRA 5-6
CHECKED BY	
GR LEADER	5/7/66
~~STRESS~~	
STRUCTURE	
WEIGHTS	5-16
PROJ ENGR	5-16
~~GOVT~~ APPD	

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

BRACKET ASSY
ASCENT STAGE- CABIN-EQUIP LINES

CONTRACT NO. NAS9-1100 DOCUMENTATION TYPE I

CODE IDENT NO.	SIZE	
26512	J	LDW280-11177

SCALE FULL LINE ITEM SHEET 1

LDW280-11177

02/02

NAS 9-1100

LDW280-11178 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23349	LM-15(45)	1EA
LM	LDW280-23349	LM-14(44)	1EA
LM	LDW280-23349	LM-13(43)	1EA
LM	LDW280-23349	LM-12(42)	1EA
LM	LDW280-23349	LM-11(41)	1EA
LM	LDW280-23349	LM-10(40)	1EA
LM	LDW280-23349	LM-9(39)	1EA
LM	LDW280-23349	LM-8(38)	1EA
LM	LDW280-23349	LM-7(37)	1EA
LM	LDW280-23349	LM-6(36)	1EA
LM	LDW280-23349	LM-5(35)	1EA
LM	LDW280-23349	LM-4(34)	1EA
LM	LDW280-23349	LM-3(33)	1EA
LM	LDW280-23349	LTA-3(13)	1EA
PART NO. LDW280-11178-13 & -15		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23349	LM-15(45)	2
LM	LDW280-23349	LM-14(44)	2
LM	LDW280-23349	LM-13(43)	2
LM	LDW280-23349	LM-12(42)	2
LM	LDW280-23349	LM-11(41)	2
LM	LDW280-23349	LM-10(40)	2
LM	LDW280-23349	LM-9(39)	2
LM	LDW280-23349	LM-8(38)	2
LM	LDW280-23349	LM-7(37)	2
LM	LDW280-23349	LM-6(36)	2
LM	LDW280-23349	LM-5(35)	2
LM	LDW280-23349	LM-4(34)	2
LM	LDW280-23349	LM-3(31)	2
LM	LDW280-23349	LTA-3(13)	2
PART NO. LDW280-11178-11		GAEC SCH NO. 32	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A

LAST SECT LTR USED
LAST DASH NO. USED -15
GRUMMAN REL INFO A
PRIM NO. 215 EMF

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
±1/32 ±.010 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	BRANDT 5-10-66
LAYOUT BY	
CHECKED BY	
GP. LEADER	R. PHILLIPS 5-10-66
VEN. DES INT.	W. BISCHOFF 5-10-66
STRUCTURES	F. E. B/B.W 5-11-66
STRUCTURES	HILDERMAN 5-11-66
WEIGHTS	D. ROBESCH 5-11-66
PROJ ENGR	J. ALBER/RMC 5-16-66
REL GROUP	A. CARAMANICA 5-21-66

© GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

RADIUS BLOCK
ASCENT-MID-SECTION EXTRA VEHICULAR
CREW TRANSFER DEVICE SUPPORT

SIZE B CODE IDENT NO. 26512 LDW280-11178 A
SCALE NONE SHEET 1.00 OF 3.00

ENG 77.1 12-65

SUPERSEDES LDW280-11178 NO CHG. 5-21-66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE- LAST REV. NO CHANGE. ADDED SH. 1.00, 1.10 & 2.00. J. BRODA 10-21-66						
A	1	1.00, 1.10						LE0280-297	FOR -11, -13 & -15 ADDED LM-7 THRU LM-15 EFF. D 7/68	NOTE D	NOT	REQ'D	J BRODA 10-24-66 MULLER	☒	☒

ENG 77.16 3-66

CHG APPROVED	LTR	GROUP LDR	VEH.DES.INT.	STRUCTURES	STRUCTURES	WEIGHTS						
	A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11178	A

SCALE NONE

SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11178-15	E	RADIUS BLOCK	AL ALLOY SHT.	QQ-A-250/12	7075-T6	.125 x 2 X 2	NONE	88	
								LDW280-11178-13	E	RADIUS BLOCK	AL ALLOY SHT	QQ-A-250/12	7075-T6	.125 x 1 X 4	NONE	83	
								LDW280-11178-11	E	RADIUS BLOCK	AL.ALLOY SHT.	QQ-A-250/12	7075-T6	.125 x 2 X 3	NONE	38	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

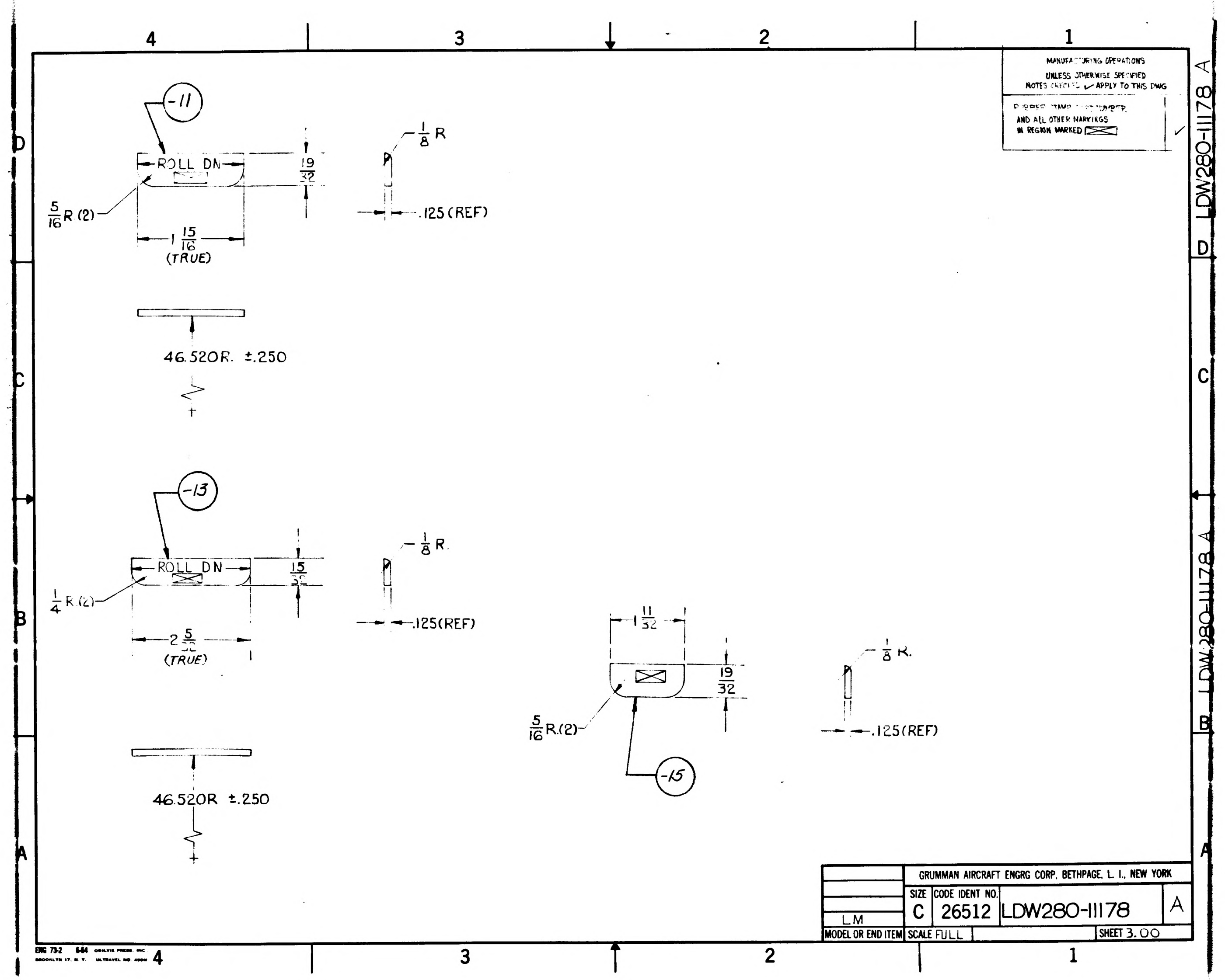
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11178	A
SCALE NONE			SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


-11
ROLL DN
5/16 R (2)
19/32
1 15/16 (TRUE)
1/8 R
.125 (REF)
46.520R. ±.250
-13
ROLL DN
1/4 R (2)
15/32
2 5/32 (TRUE)
1/8 R.
.125(REF)
46.520R ±.250
11/32
19/32
5/16 R(2)
-15
1/8 R.
.125(REF)
LDW280-11178 A
4
3
2
1
D
C
B
A

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

RUBBER STAMP PART NUMBER
AND ALL OTHER MARKINGS
IN REGION MARKED ☒ ✓

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

LM	SIZE C	CODE IDENT NO. 26512	LDW280-11178	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

Q1 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

~~DWG~~ NO. LEO 280 | EO NO. 714
CONTROL INFO NO. LDW280A9091

ON THE NOTED DWGS DELETE LM4 THRU LM15 EFFECTIVITY.

DRAWING NO.	DASH NO *	TITLE	NEXT ASSY	CHG. NO.
✓ LDW280-23349	-1	SUPT INSTL (EVCTD)	LDW280-54020	A4
✓ LDW280-23485	-1 -2	FITTING ASSY	LDW280-23349	B6
✓ LDW280M10832	-1	FITTING	LDW280-23349	B3
✓ LDW280M10830	-1	FITTING	LDW280-23349	B2
✓ LDW280-11178	-11 -13 -15	RAD. BLOCK	LDW280-23349	B1

DETAIL SPEC REQ ☐ | CL II ENGRG CHG ☐ | CL I ENGRG CHG ☑ LCD 1981 CCA657α

3

REASON FOR EO: DELETION OF EXTRAVEHICULAR CREW TRANSFER DEVICE. LH M/S

DESCRIPTION OF EO: ON * REMOVED LM4 THRU LM15

Ⓡ GAEC EO RELEASE: JK 9/14/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LM4 (34) THRU LM15 (45)		

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK | SCRAP ✓
PRIORITY: C

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY	JaP			F.N.R.	CW			Boll
DATE	9/12/67			9/12/67	9/12/67		9/13/67	9-14-67

DRAWING TITLE: NOTED
DRAWING NO.: LEO 280
EO NO.: 714

9/18
ISSUED BY E. STAHL X7033 9-11-67 SECTION V.D.I. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11179 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW 280 -53123	LM-15(45)	1
	LDW 280 -53123	LM-14(44)	1
	LDW 280 -53123	LM-13(43)	1
	LDW 280 -53123	LM-12(42)	1
	LDW 280 -53123	LM-11(41)	1
	LDW 280 -53123	LM-10(40)	1
	LDW 280 -53123	LM-9(39)	1
	LDW 280 -53123	LM-8(38)	1
	LDW 280 -53123	LM-7(37)	1
	LDW 280 -53123	LM-6(36)	1
	LDW 280 -53123	LM-5(35)	1
	LDW 280 -53123	LM-4(34)	1
	LDW 280 -53123	LM-3(33)	1
	LDW 280 -23123	LTA-3(13)	1
	LDW 280 -28123	LM-2(32)	1
	LDW 280 -28123	LM-1(31)	1
LM	LDW 280 -28123	LTA 8(18)	1
PART NO. LDW 280-11179-11		GAEC SCH NO. 31-2	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

		GRUMMAN REL INFO A			
LAST SECT LTR USED		PRIM NO.	LE(001)		
LAST DASH NO. USED	-11	-207	MP-14	A-10-18	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS-9-1100
LINE ITEM I
DOCUMENTATION TYPE II

DRAWN BY	FOSTER 9-26-66	RELIABILITY	
LAYOUT BY	BALDASSIN		
CHECKED BY	9-27-66		
GR.LEADER	Willy 9/29/66		
VEH. DES. INT	FOR W.R. BISCHOFF		
STRUCTURES		PROJ ENGR	R. M. Carbee 10-12
STRUCTURES		REL GROUP	10/17/66
WEIGHTS			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

PLATE
ASCENT STAGE MID. SECT. PORT
LIFE SPT. SYS. LINE SPT

SIZE	CODE IDENT NO.		
B	26512	LDW280-11179	A
SCALE NONE		SHEET 1 OF 4	

ENG 77.1 12-65

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	APPD
											REWORK	SCRAP			
A	1	1,1.10,2,3.						EO A1	EO A1 INITIAL DRAWING RELEASE, PARTS MADE PER E.O.	LTA-3,-8 LM-1 THRU LM-6	NOT	REQ'D	FOSTER 9-26-66		
	2	1,1.10							FOR LM-3 THRU-6 N/A LDW280-53123 WAS LDW280-23123	LM-3 THRU -6	NOT	REQ'D			
	3	1,1.10							IN MOD. BLK ADDED LM-7 THRU LM-15	LM-7 THRU-15	NOT	REQ'D	EG	RMC	

CHG APPROVED

LTR	GROUP LDR	VEH.DES.INT.	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY					
A	—		GW 11-10								

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11179	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11179-11	E	PLATE	AL ALY SH	QQ-A-250/4	2024-T3	.040 x 3/4 x 1 7/8	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-11179
A
SCALE NONE
SHEET 2.00

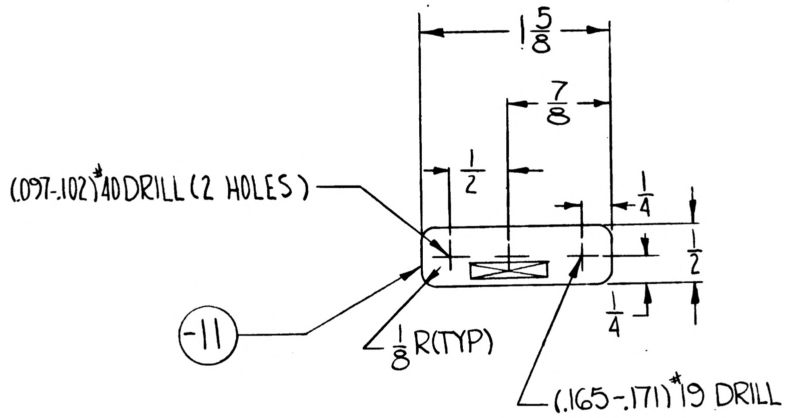
ENG 77.2 7-65

01

NAS 9-1100

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓



1 5/8
7/8
1/2
1/4
1/2
1/4
(.097-.102) #40 DRILL (2 HOLES)
-11
1/8 R(TYP)
(.165-.171) #19 DRILL

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11179	A
SCALE FULL		SHEET 3.00	

ENG 73.1 6-64

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11181-15	E	DOUBLER	AL ALLOY SH	QQ-A-250/12	7075-T6	.025×1 × 1 1/4		88	6C
		LDW280-11181-13	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.040×2 ×4 3/4	T6	88	3A
		LDW280-11181-11	E	REINFORCEMENT	AL ALLOY SH	QQ-A-250/12	7075-T6	.040×3 1/2×4 5/8		88	7A

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	AL HEAT TREAT	MIL-H-6088
88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11181	A

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

LDW280-11181 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53020	LEM-3(33)	2
LEM	LDW280-23020	LTA-3(13)	2

PART NO. LDW280-11181-15

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-54018	LEM-15(45)	1 EA.
		LEM-14(44)	1 EA
		LEM-13(43)	1 EA
		LEM-12(42)	1 EA
		LEM-11(41)	1 EA
		LEM-10(40)	1 EA
		LEM-9(39)	1 EA
		LEM-8(38)	1 EA
		LEM-7(37)	1 EA
	LDW280-54018	LEM-6(36)	1 EA
	LDW280-54018	LEM-5(35)	1 EA
	LDW280-54018	LEM-4(34)	1 EA
	LDW280-53018	LEM-3(33)	1 EA
	LDW280-28018	LEM-2(32)	1 EA
	LDW280-28018	LEM-1(31)	1 EA
	LDW280-28018	LTA-8(18)	1 EA
LEM	LDW280-23018	LTA-3(13)	1 EA

PART NO. LDW280-11181-11∉-13

(5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	A	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO B	
LAST DASH NO. USED	-19	PRIM NO. 215	K(001) ME-3B 1/13/9

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM I
DOCUMENTATION TYPE II

DRAWN BY	JESAITIS,T 6-7-66	RELIABILITY	∽
LAYOUT BY	TORRACO		
CHECKED BY	WMW 6-8-66		
GR LEADER	W Kelly 6/14/66		
VEH DES INT	W L Bischoff		
STRUCTURES	GB 6/15	PROJ ENGR	Plunkett 29 Jun 66
STRUCTURES	Hildesman 6/15	REL GROUP	Botti 7-1-66
WEIGHTS	[illegible] 6/17		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

REINFORCEMENT
ASCENT STAGE MID SECTION

SIZE	CODE IDENT NO.		
B	26512	LDW280-11181	B

SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
A	1	1.00, 1.10, 2 & 3						EO-A1	EO-A1 INITIAL DRAWING RELEASE, PARTS MADE PER EO	LTA-3 & -8 LEM-1 THRU-6	NOT	REQD	JESAITIS, T 6-8-66		7-1-66
	2								ADDED -15 DOUBLER	LTA-3 LEM-3 THRU-6					
	3	3.00						Ⓡ	REF EO A1: ON-13 DIM $1\frac{1}{32}$ WAS $1\frac{1}{16}$ ww						Ⓑ
B	1.	1.00, 1.10		—				LE0280-297	FOR DASH NUMBERS -11, -13, & -15 ADDED LEM-7 THRU LEM 15 EFF.	LEM-7 THRU LEM-15	NOT	REQ'D	E. COX 5-3-68 RMS		
	2	1.10, 3.00						EOB2	ON -13, ADDED #19 HOLE	LTA-3 & -8 LEM-1 THRU-15	✓				
	3	1.10						EOB3	CANCELLED BY E.O.B4		✓				
	4	1.10						EOB4	CANCELLED E.O.B3		NOT	REQ'D			
	5.	1.00		C Ⓡ		✓		EOB5 LCD2011 CCA668	IN M/B OF -15; DELETED LM-4 (34) THRU LM-15 (45)	LM-4 THRU LM-15	4/13/69	✓			

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

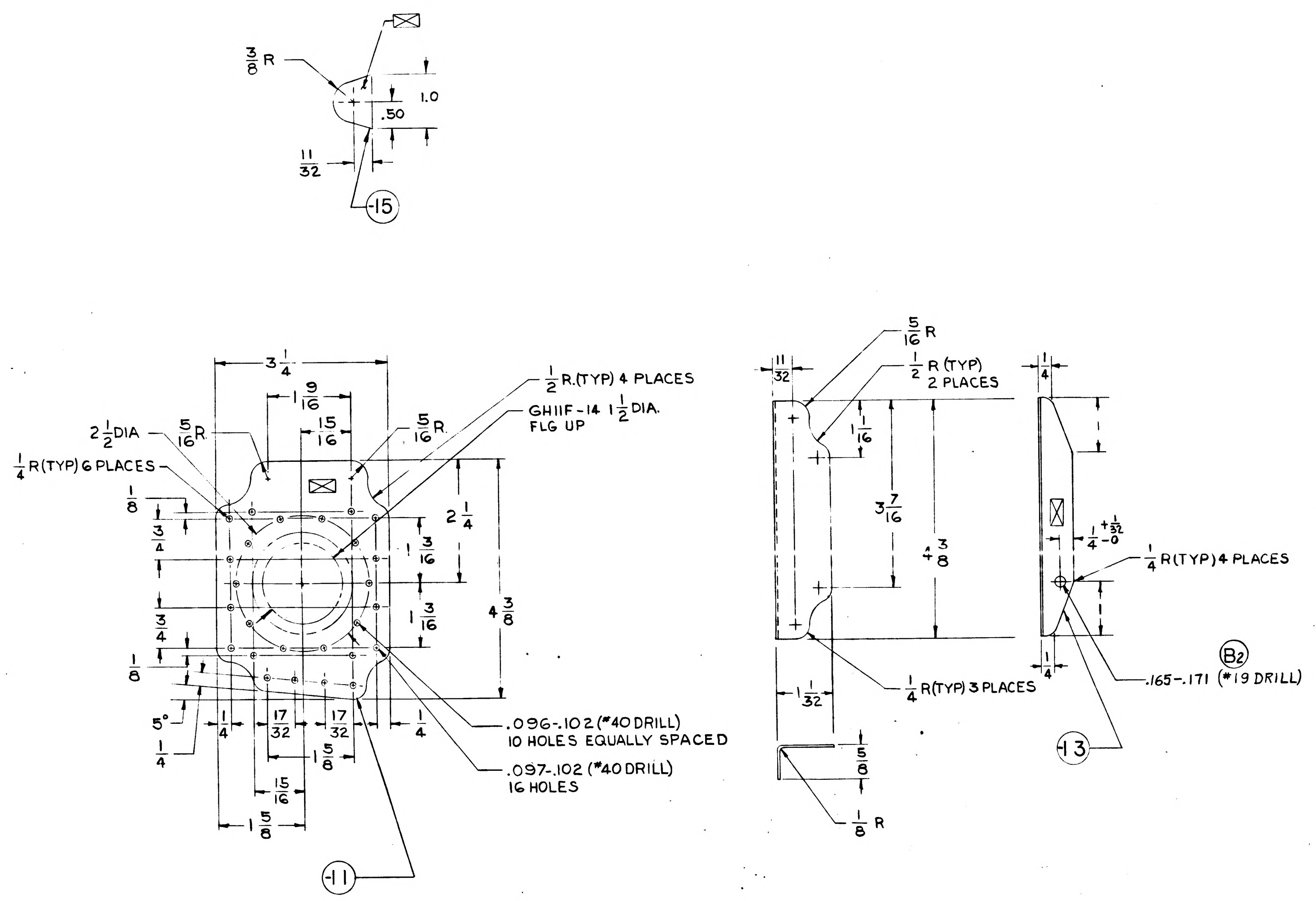
SIZE	CODE IDENT NO.		
B	26512	LDW280-11181	B Ⓑ
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.



3/8 R
1.0
.50
11/32
-15
3 1/4
1 9/16
15/16
2 1/2 DIA
5/16 R
5/16 R
1/4 R (TYP) 6 PLACES
1/2 R. (TYP) 4 PLACES
GH11F-14 1 1/2 DIA. FLG UP
1/8
3/4
1 3/16
2 1/4
1 3/16
4 3/8
3/4
1/8
5°
1/4
1/4
17/32
17/32
1/4
1 5/8
15/16
1 5/8
.096-.102 (#40 DRILL) 10 HOLES EQUALLY SPACED
.097-.102 (#40 DRILL) 16 HOLES
-11
11/32
5/16 R
1/2 R (TYP) 2 PLACES
1 1/16
3 7/16
4 3/8
1/4 R (TYP) 3 PLACES
1 1/32
5/8
1/8 R
1/4
1/4 +1/32 -0
1/4 R (TYP) 4 PLACES
1/4
B2
.165-.171 (#19 DRILL)
-13

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	D	26512	LDW280-11181	B
	SCALE FULL		SHEET 3.00	

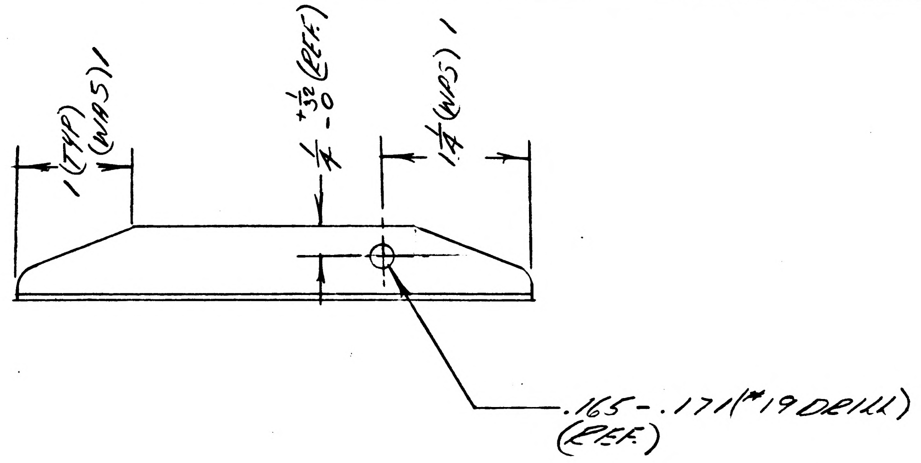
NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 25512
ENGINEERING ORDER

DWG. NO. LDW280-11181
EO NO. C1
CONTROL INFO NO. LM-2-5633

ON-13



ON REWORK: FLUSH PLUG EXTRANEOUS HOLE WITH AD RIVET STOCK. FAR SIDE ONLY

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☒ CL I ENGRG CHG ☐

REASON FOR EO: TO PREVENT CHAFING ON INSTL.

DESCRIPTION OF EO: ON-13 RELOCATED #19 DRILL, 1 1/4 DIM WAS 1"

GAEC EO RELEASE (2): R 10/25/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-10 (40)	
		THRU	
		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK ✓ SCRAP

APPROVED BY	F.K.R.			DV	KC			
DATE	10/24/69			10/23	10/14/69	10/14/69	10/24/69	10/15/69
	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C
DRAWING TITLE: REINFORCEMENT-A/S MID SECT.
DRAWING NO.: LDW280-11181
EO NO.: C1

ISSUED BY: LIAISON, R. GRELL, X3604 SECTION: VDI GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11182

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-52076	LEM-6(36)	1
		LEM-5(35)	1
		LEM-4(34)	1
		LEM-3(33)	1
LEM	LDW280-52076	LEM-2(32)	1
PART NO. LDW280-11182-13		GAEC SCH NO. 32-4	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-52076	LEM-6(36)	5
		LEM-5(35)	5
		LEM-4(34)	5
		LEM-3(33)	5
LEM	LDW280-52076	LEM-2(32)	5
PART NO. LDW280-11182-11		GAEC SCH NO. 32-4	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED —

LAST DASH NO. USED -13

GRUMMAN REL INFO

PRIM NO. V6(001) 215 WP12 JR 5-17

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS — ANGLES 1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM #1

DOCUMENTATION TYPE II

DRAWN BY J.Gardella 5-11-66

LAYOUT BY Valentine 5/13

CHECKED BY EG 5-12-66

GR LEADER 5/13/66

VEH. DES INT 5/16

STRUCTURES ES BW 5/16

STRUCTURES Wilderman 5/16

WEIGHTS 5-19

PROJ ENGR 5-19

REL GROUP Botti 5-21-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SPACER
ASCENT STAGE - MIDSECT-DROGUE
FTG 5 THERMAL

SIZE B

CODE IDENT NO. 26512

LDW280-11182

SCALE NONE

SHEET 100 OF 3

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11182-13	E	SPACER	TITANIUM SH.	MIL-T-9046 D-	6AL-4V TI-ALLOY	.017 × 1 × 2 3/8	NONE	NONE	
		LDW280-11182-11	E	SPACER	TITANIUM SH.	TYPE III COMP-C	ANL. COND	017 × 1 × 2½	NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11182

SCALE NONE SHEET 2.00

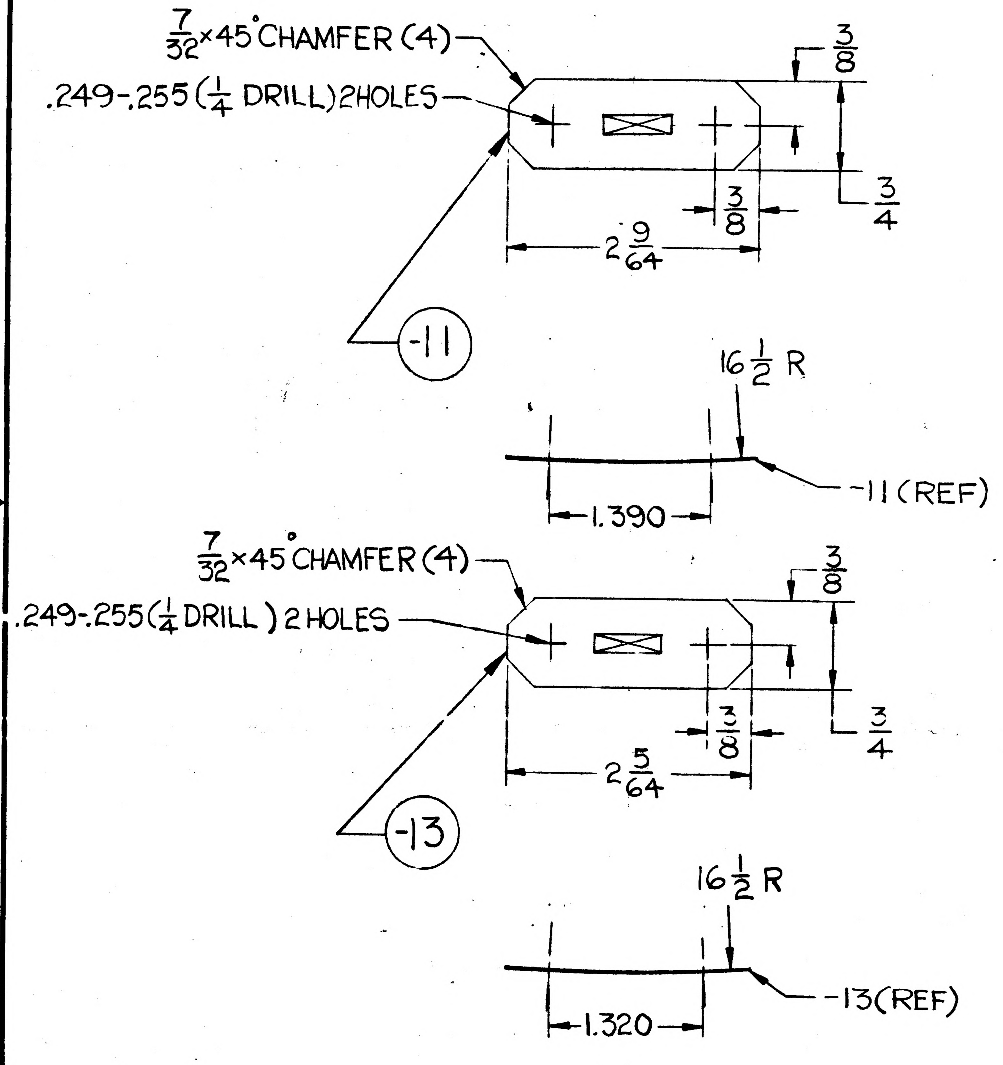
ENG 77.2 7-65

01

NAS 9-1100

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY	✓



7/32 × 45° CHAMFER (4)
.249-.255 (1/4 DRILL) 2 HOLES
3/8
3/4
3/8
2 9/64
-11
16 1/2 R
-11 (REF)
1.390
7/32 × 45° CHAMFER (4)
.249-.255 (1/4 DRILL) 2 HOLES
3/8
3/4
3/8
2 5/64
-13
16 1/2 R
-13 (REF)
1.320

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11182
SCALE FULL		SHEET 3.00

ENG 73.1 6-64

01

NAS 9-1100

25

GMO 32.3 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT. NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280
EO NO. 297
CONTROL INFO NO. LDW280 A 0659

*

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-11161	B1	SEE DRAWING
-11163	A1	↑
P 11168	B1	
-11169	A1	
-11170	A1	
-11178	A1	
P 11180	B1	
-11181	B1	
-11182	A1	
-11183	A1	
-11192	B1	
-11204	A1	
-11280	A2	
-11284	B1	
-11294	A5	
-11296	B2	
-11297	B1	
-11300	B1	
-11301	B1	
-11305	B1	
-11316	A1	
-11320	B1	
-11322	A1	
-11337	B1	
LDW280- -11374	A3	
-		↓
~~LDW280~~		SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ		CL III ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

Ⓡ GAEC EO RELEASE FK 10/17/66

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37), LEM	8(38), LEM-9(39)
LEM		LEM-10(40), LEM-	11(41), LEM-12(42),
LEM		LEM-13(43), LEM-	14(44), LEM-15(45)

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
✓		VOT REC'D		DATE	9/23/66			—	9-19		10-17-66	10-3-66
REVISE DWG	RECORD EO	REWORK	SCRAP		VLT	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGR	PROJ ENGRG	

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LE0280
EO NO. 297

ISSUED BY: L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 282 PL 35 EN

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280		EO NO. 931
CONTROL INFO NO. LDW280B2702		

(1) ADD "TEST 75" EFF. & N/A LSK 280-11193 TO THE FOLLOWING PARTS:

PART Nº *	CHANGE LTR	QTY	TITLE
LDW280-10227-11,-12	E2	1 EA	SEE DWG
-27 & -28			
-10545-11,-17,-19	B2	1 EA	
-10488-11	F1	1	
-10497-11	B2	1	
-10498-15	D4	1	
-10450-13,-16	C3	1 EA	
-10480-11,-12,-13,-14	B2		
-10481 - 15,-16,-19,-20	C2		
-10510-12,-21,-22,-23,-24	C2	1 EA	
-10443-11,-13-15	C1	1 EA	
-23124-1,-2	A2	1 EA	
-53050-3	B6	1	
-10486-11,-13-23	C2	1 EA	
10444-15	C2	1	
-10445-15	C2	1	
-10519-11	B2	1	
-54017-1	B1	1	
-10838-11,-12	B2	1 EA	
-11182-11	A2	3	
-11182-13		1	
LDW 280-23028-1	E6	1	
LDW 280 M-10840-1	B3	1	
LDW 280M 10479-1	A2	4	
LDW 280M-10534-1	B3	1	
-10177-1,-2	E1	1 EA	
-10177-3		4	
10264-1	C1	1	
10484-1	C1	1	
-10844-1	A5	1	
-10501-1	C1	1	
-10432-1,-2	B2	1 EA	
-10433-1	B2	1	
-10447-1	C3	1	
-2		2 EA	
LDW280M-10700-1	B4	1	SEE DWG

(2) ADD "TEST 75" EFF & N/A LDW280-54017 TO

LDW 280-54022-1	B6	1	SEE DWG
LDW 280M-10383-7	D8	1	SEE DWG

(3) ADD "TEST 75" EFF. TO THE FOLLOWING PARTS

PART Nº	CHANGE LTR	NEXT ASSY	QTY	TITLE
LDW280-10362-11	B3	LDW 280-53050	2	SEE DWG
LDW280-10362-13			1	
LDW280-10362-11,-13		LSK-280-11193	1 EA	
LDW280M10406-1	C1	LDW280-53050	1	
LDW280M10406-2		LSK280-11193	1	
LDW280M10407-5	C2	LSK280-11193	1	
LDW280M10407-7		LDW280-53050	1	
LDW280-10361-12,-17,-18	B3	LSK280-11193	1 EA	
LDW280-10361-11,-13,-15,-16,-17,-18		LDW 280-53050	1 EA	
LDW280-10361-19			2	
LDW280-10360-14	B3	LSK280-11193	1	
LDW280-10360-11,-12		LDW 280-53050	1 EA	SEE DWG

(4) ADD "TEST 75" EFF. & N/A LDW 280-53050 TO THE FOLLOWING PARTS

PART Nº	CHANGE LTR	QTY	TITLE
LDW280M-10404-1	C4	1	SEE DWG
LDW280M-10403-1	C3	1	SEE DWG

(5) ADD "TEST 75" EFF & N/A LDW280-23028 TO THE FOLLOWING PARTS

PART Nº *	CHANGE LTR	QTY	TITLE
LDW280-10354-13,-15,-17	B2	1 EA	SEE DWG
LDW280-10355-11,-13,-14,-15	B3	1 EA	
LDW280M10559-11 & -12	A2	1 EA	
LDW280-10482-11,-13,-15-17	A2	1 EA	
LDW280M10381-1	C4	1	
LDW280M10382-1	C3	1	
LDW280-10554-11	B2	1	SEE DWG

(6) ADD "TEST 75" EFF, N/A LDW280-23124, TO

LDW280M10414-1 & -2	B3	1 EA	SEE DWG

(7) ADD "TEST 75" EFF N/A LDW 280-54022 TO THE FOLLOWING PARTS

PART Nº *	CHANGE LTR	QTY	TITLE
LDW280-10844-1	C2	1	SEE DWG *
LDW280M-10397-3	E1	1	SEE DWG

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD2800

⑤

REASON FOR EO: PARTS REQUIRED FOR DOCKING TUNNEL TEST ASSY.

DESCRIPTION OF EO: FOR DASH Nº * ADDED TEST 75 ASSY REQ'TS

GAEC EO RELEASE: H.F 4/30/68

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONT UNIT NO.
LM		TEST(75)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
REVISE DWG	RECORD EO	REWORK	SCRAP
✓		NOT REQ'D	

APPROVED BY	JMS			F.L.K	60		Jaf	JM
DATE	3/28/68			3-28-6	3-28		3/29/68	4-30-68
--	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONF~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DWG	LEO 280	931

3/29/68
ISSUED BY R. SMALL 3/26/68 X7033 SECTION VDI GROUP NO. 335 PL 25

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NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280		EO NO. 1161
CONTROL INFO NO. LDW280B-5485			

IN M/B REVISE QTY. ON EFF: "TEST 75", N/A LSK280-11193 ONLY AS SHOWN BELOW:

DRAWING NUMBER	QTY.	CHG. No.	DRAWING TITLE
LDW280-10227-11 -12	2 REQ.(WAS 1) 2 REQ.(WAS 1)	E4	SEE DWG.
LDW280-10361-19	2 REQ.(WAS 1)	B5	
LDW280-10362-11	2 REQ.(WAS 1)	B4	
LDW280-10480-11 -12 -13 -14	2 REQ. EA. (WAS 1)	B3	
LDW 280-10481-15 -16 -19 -20	2 REQ. EA. (WAS 1)	C3	
LDW280-10486-23	2 REQ(WAS 1)	C4	
LDW280-10545-17 -19	2 REQ. EA. (WAS 1)	B4	
LDW280-11182-11	5 REQ.(WAS 3)	A3	
LDW 280M10432-1&-2	2 REQ.EA.(WAS 1)	B4	
LDW280M10477-1&-2	4 REQ.EA.(WAS 2)	B4	SEE DWG.

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NAS 9-1100

*= USE APPLICABLE DASH NUMBERS IN DESCRIPTION
**= USE APPLICABLE No. OF REQ'D IN DESCRIPTION

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	✓ LCD 3428 CCA 1360

REASON FOR EO: TO UPDATE TEST SPECIMEN

DESCRIPTION OF EO: IN M/B ON DASH * EFF: TEST 75 REVISED QTY. ** WAS **.

GAEC EO RELEASE: C

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		TEST(75)	

DRAWING CHANGE REQD: REVISE DWG ✓ · RECORD EO

DISPOSITION OF PARTS: REWORK NOT · SCRAP REQ'D

APPROVED BY / DATE:

VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
9/13/68			FDR 9-13-68	CW 9/13/68		9/13/68	

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LEO 280
EO NO.: 1161

CDIC 7-18-68
ISSUED BY W. PAIUK SECTION VEH. DES. INST. GROUP NO. 335 PL 25

LDW280-11183

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53476	LEM-6(36)	1 EA
↕	LDW280-53476	LEM-5(35)	1 EA
	LDW280-53476	LEM-4(34)	1 EA
LEM	LDW280-53476	LEM-3(33)	1 EA
PART NO. LDW280-11183-11,-13,-15		GAEC SCH NO.	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	—	GRUMMAN REL INFO			
LAST DASH NO. USED	-15	PRIM NO.	VE(001)		
		215	MP17		JR 6-17

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	A.ESPOSITO 5-12-66	RELIABILITY	
LAYOUT BY	G.ROCKLEIN GWR		
CHECKED BY	WCG 5/12/66		
GR LEADER			
VEH DES INT			
STRUCTURES	5/10	PROJ ENGR	5-23
STRUCTURES	Hilderman 5/16	REL GROUP	Botte 5-27-66
WEIGHTS	5-23		

® GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP
ASCENT STAGE-MID SECTION
+X 253.5 DECK

SIZE B
CODE IDENT NO. 26512
LDW280-11183
SCALE NONE
SHEET 1.00 OF 3

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11183-15	E	CLIP	AL ALLOY SH	QQ-A-283	7075	.040×1 7/8×3 3/4	T6	88	4C
		-13	E					.040× 2 ×2 3/4	T6	88	2C
		LDW280-11183-11	E	CLIP	AL ALLOY SH	QQ-A-283	7075	.040×1 7/8×3 3/4	T6	88	4B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP-14-9030
T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B | CODE IDENT NO. 26512 | LDW280-11183

SCALE NONE | SHEET 2.00

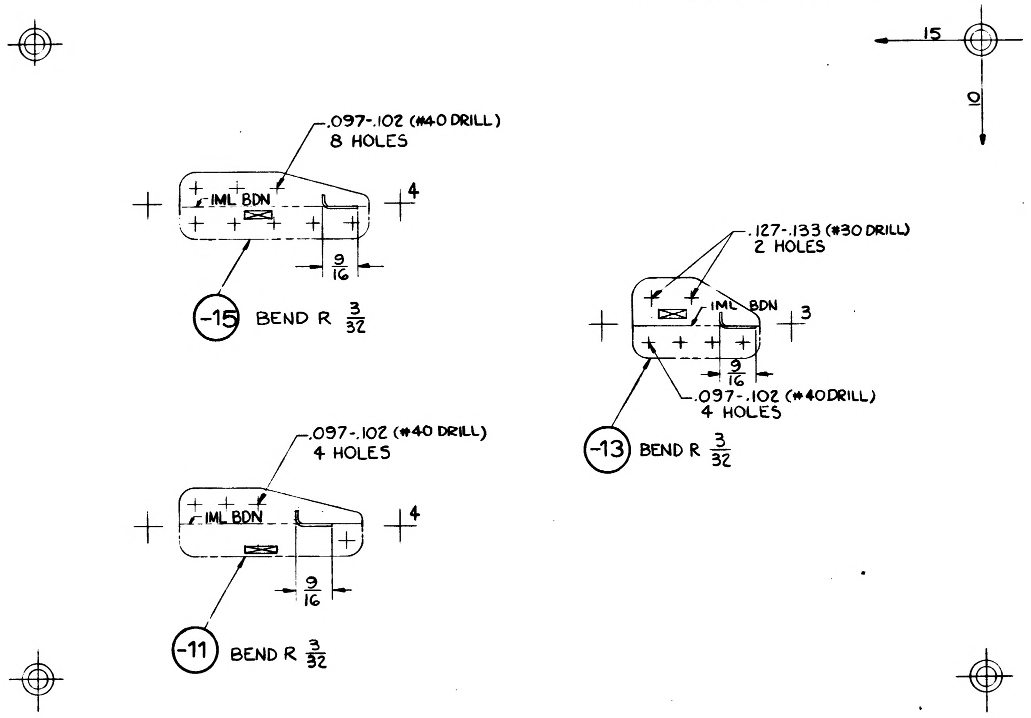
ENG 77.2 7-65

01

NAS 9-1100

NOTE:
NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓


15
0
.097-.102 (#40 DRILL)
8 HOLES
IML BDN
4
9/16
-15
BEND R 3/32
.127-.133 (#30 DRILL)
2 HOLES
IML BDN
3
9/16
.097-.102 (#40 DRILL)
4 HOLES
-13
BEND R 3/32
.097-.102 (#40 DRILL)
4 HOLES
IML BDN
4
9/16
-11
BEND R 3/32

LDW280-11183

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK		
LEM	SIZE C	CODE IDENT NO. 26512	LDW280-11183
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

FOR PHOTO 1 REPRODUCTION
K2

NAS 9-1100

01

25

GDO 30.3 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO LEO280
EO NO. 297
CONTROL INFO NO. LDW280 A 0659

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS* THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM 10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-11161	B1	SEE DRAWING
-11163	A1	
P 11168	B1	
-11169	A1	
-11170	A1	
-11178	A1	
P 11180	B1	
-11181	B1	
-11182	A1	
-11183	A1	
-11192	B1	
-11204	A1	
-11280	A2	
-11284	B1	
-11294	A5	
-11296	B2	
-11297	B1	
-11300	B1	
-11301	B1	
-11305	B1	
-11316	A1	
-11320	B1	
-11322	A1	
-11337	B1	
LDW280-11374	A3	
-		
~~LDW280~~		SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ		CL III ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
ADDITIONAL REQUIREMENTS	FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.	FK 10/17/66

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY	
LEM		LEM-7(37)LEM	8(38)LEM-9(39)	✓ REVISE DWG	RECORD EO	NOT REQ'D REWORK	SCRAP	DATE 9/23/66	VDI
LEM		LEM-10(40)LEM-11	(41)LEM-12(42)	PRIORITY C	DRAWING TITLE NOTED			DRAWING NO. LEO280	EO NO. 297
LEM		LEM-13(43)LEM-14	(44)LEM-15(45)						

SUPPORT | RELIAB. GROUP | GROUP LEADER — | STRESS GROUP — bw 9-29 | ENGRG | PROJ ENGRG PMS 10-17-66 | AC 10-3-66

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO 282 PL 35 EN

01
NAS 9-1100

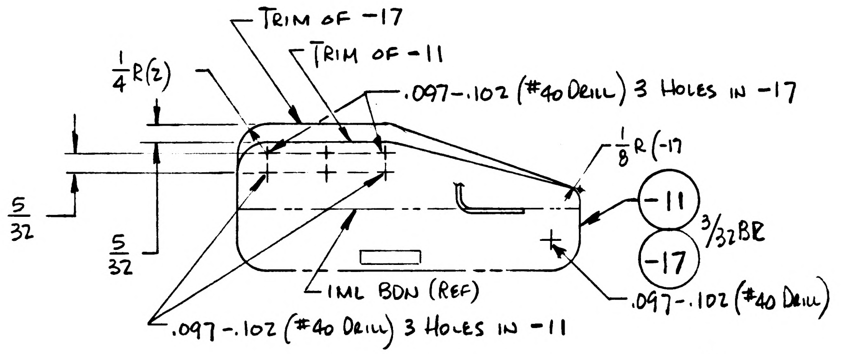
ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO.	LDW 280-11183	EO NO.	A2
CONTROL INFO NO.	LDW 280A-3537		

CREATE -17 IDENTICAL TO -11 (EXCEPT AS SHOWN) FOR LM-3 (33) THRU LM-15 (45) N/A LDW 280-53476 1 REQ'D/MOD

RESTRICT EFFECTIVITY OF -11 TO LTA-8 (18), LM-1 (31) & LM-2 (32).



TRIM OF -17
TRIM OF -11
$\frac{1}{4}$R (2)
.097-.102 (#40 DRILL) 3 HOLES IN -17
$\frac{1}{8}$R (-17
-11
3/32 BR
-17
$\frac{5}{32}$
$\frac{5}{32}$
IML BDN (REF)
.097-.102 (#40 DRILL)
.097-.102 (#40 DRILL) 3 HOLES IN -11

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
STRESS REQUIREMENT (TO OBTAIN GREATER EDGE DISTANCE FOR RIVET IN FIBERGLASS)	CREATED -17 EFFECTIVITY OF -11 WAS LTA-8 (18), LM-1 (31) THRU LM-15 (45)	LE 11/30

MODEL	EFFECTIVITY		
	~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	~~SUB CONTR UNIT NO.~~
LM	LM-3 (33)	THRU LM-15	(45)

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
✓			✓	DATE	11/21/66			—	11-22		11-23-66	11-29-66
REVISE DWG	RECORD EO	REWORK	SCRAP	5	V.O.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	CLIP - ASCENT STAGE, MID SECTION, +X 253.5 DECK	LDW 280-11183	A2

ISSUED BY Geo. W. Rocklein x1441 11/18/66 SECTION Veh. Des. Int. GROUP NO. 335 PL 35

01 NAS 9-1100

ENG 32.1 REV 3-65

FITH C

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW 280-11183
EO NO. A5
CONTROL INFO NO. LDW 280A-7219

REMOVE -13 AND -15 REQUIREMENTS

N/A LDW280-53476
LM-3(33) THRU LM-15(45)

DETAIL SPEC REQ ☐	CL II ENGRG CHG ☐	CL I ENGRG CHG ☑	LCD# 1244

5

REASON FOR EO: INCREASED FITH LOADS

DESCRIPTION OF EO: DELETED -13 & -15

Ⓡ GAEC EO RELEASE: C JK 6/6/67

MODEL	~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	~~SUB-CONTR UNIT NO.~~
LM	LM-3(33) THRU LM-15(45)		

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK | SCRAP -13 -15

	Y.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY								
DATE	5/25/67			5/25/67	5/26		5/26	6/6/67
5								

PRIORITY: C

DRAWING TITLE: CLIP- ASCENT STAGE, MID SECTION, +X 253.5 DECK

DRAWING NO.: LDW 280-11183

EO NO.: A5

ISSUED BY Geo. W. ROCKLEIN × 7033 5/25/67 SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11184

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-51184	1FM-1 (31)	1EA
PART NO. LDW280-11184-11, -13, -15, -16, -17, -19 & -21		GAEC SCH NO. 30—	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -20

GRUMMAN REL INFO

PRIM NO.	215		
LE(001)	MP-8-15-6		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY	FITZGERALD 5/20/66	RELIABILITY	
LAYOUT BY	SHANLEY	THERMO	AB FOR MT 9/17/66
CHECKED BY	EG 7-25-66		
GR.LEADER	G. Luciatesi 8/11		
VEH.DES.INT	Paniciano 8/12		
STRUCTURES	8/11	PROJ ENGR	R.M. Carbee 8-13
STRUCTURES	Hilderman 8/13	REL GROUP	9-23-66
WEIGHTS	8-25		

Ⓡ GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SKIN
ASCENT STAGE CABIN
IMU BEAM THERMAL SHIELD

SIZE	CODE IDENT NO.	
B	26512	LDW280-11184
SCALE	NONE	SHEET 1.00 OF 3

ENG 77.1 12-65

CRD 8-27-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11184-21	E	CLIP	AL. ALLOY SH	QQ-A-250/4	2024 T3	.032 x 1 3/4 x 2	T42	76	
								LDW280-11184-19	E	↑	↑	↑	↑	.032 x 1 3/4 x 2	↑	↑	
								LDW280-11184-17	E					.032 x 1 3/4 x 2			
								LDW280-11184-16	E	↓				.032 x 2 1/2 x 3 1/4	↓		
								LDW280-11184-15	E	CLIP	↓	↓	↓	.032 x 2 1/2 x 3 1/4	T42	↓	
								LDW280-11184-13	E	FORMER	AL. ALLOY SH.	QQ-A-250/4	2024 T3	.020 x 10 1/2 x 29 3/4	T3/T42	76	
								LDW280-11184-11	E	SKIN	SEE NOTE #1			.015 x 7 x36	NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						76	ALODINE	LSP14-9010
						T42	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

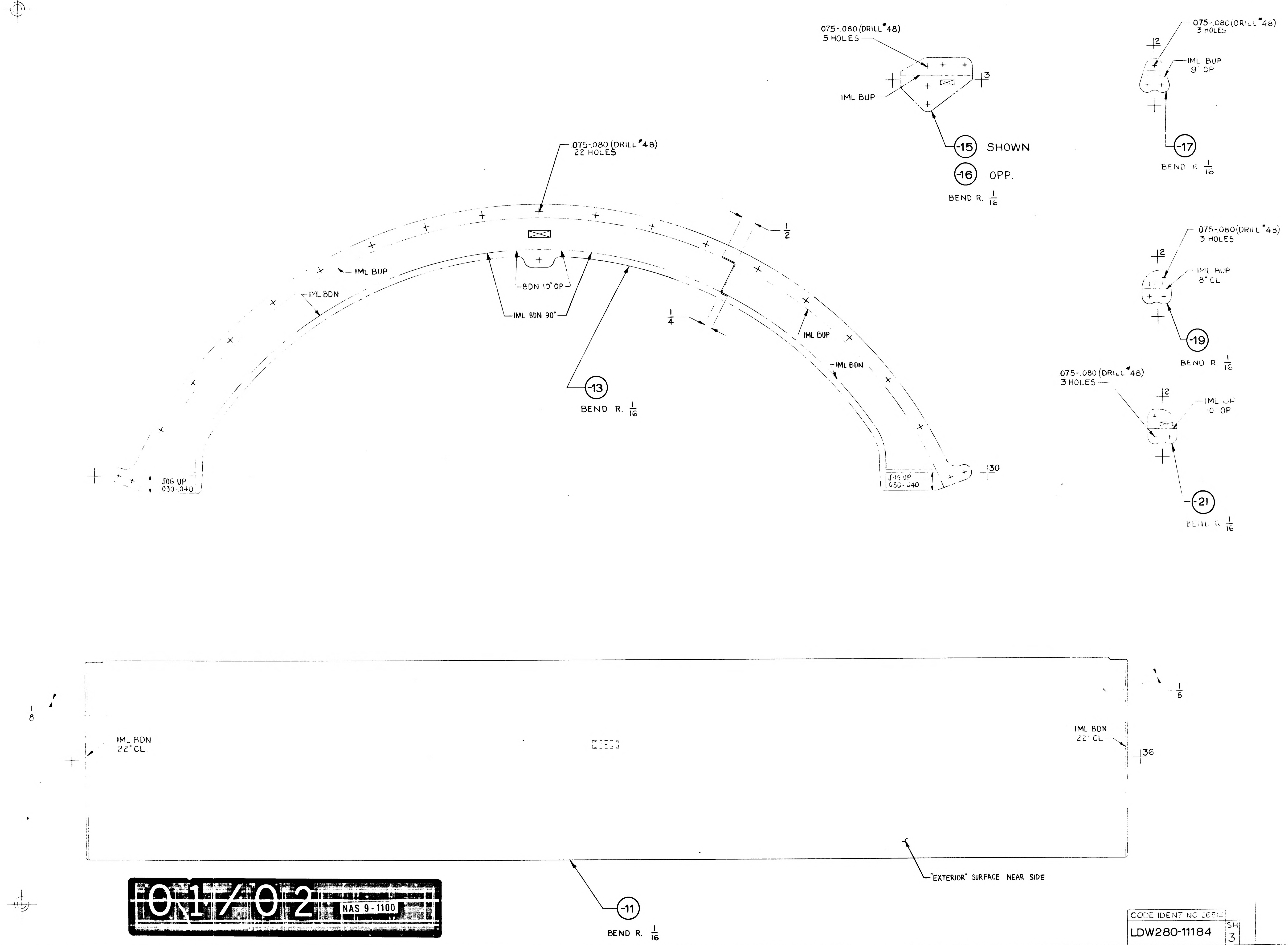
SIZE B | CODE IDENT NO. 26512 | LDW280-11184

SCALE NONE | SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

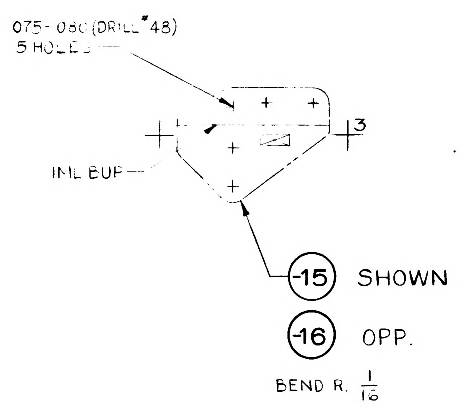


075-.080 (DRILL #48)
22 HOLES
IML BUP
IML BDN
BDN 10° OP
IML BDN 90°
1/2
1/4
IML BUP
IML BDN
JOG UP
.030-.040
JOG UP
.030-.040
130
-13
BEND R. 1/16
075-.080 (DRILL #48)
5 HOLES
IML BUP
3
-15 SHOWN
-16 OPP.
BEND R. 1/16
075-.080 (DRILL #48)
3 HOLES
2
IML BUP
9° OP
-17
BEND R 1/16
075-.080 (DRILL #48)
3 HOLES
2
IML BUP
8° CL
-19
BEND R 1/16
.075-.080 (DRILL #48)
3 HOLES
2
IML UP
10° OP
-21
BEND R 1/16
1/8
IML BDN
22° CL.
1/8
IML BDN
22° CL
36
"EXTERIOR" SURFACE NEAR SIDE
-11
BEND R. 1/16

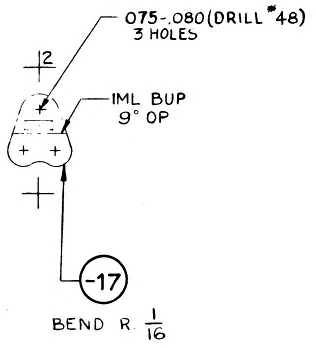
01/02 NAS 9-1100

CODE IDENT NO 26512

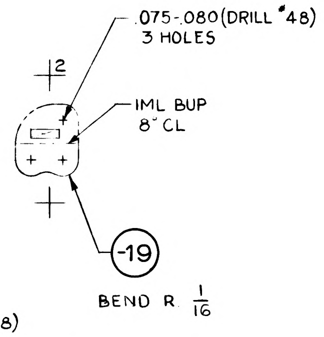
LDW280-11184 SH 3



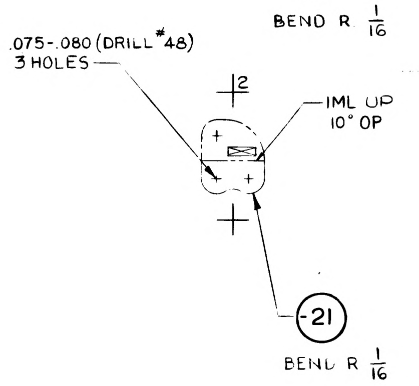
.075-.080 (DRILL #48)
5 HOLES
IML BUP
3
-15 SHOWN
-16 OPP.
BEND R. 1/16



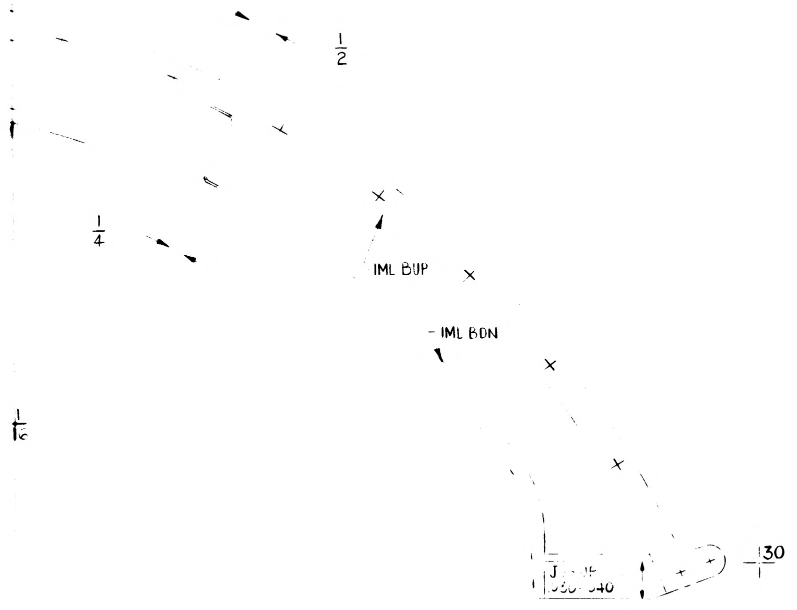
.075-.080 (DRILL #48)
3 HOLES
2
IML BUP
9° OP
-17
BEND R 1/16



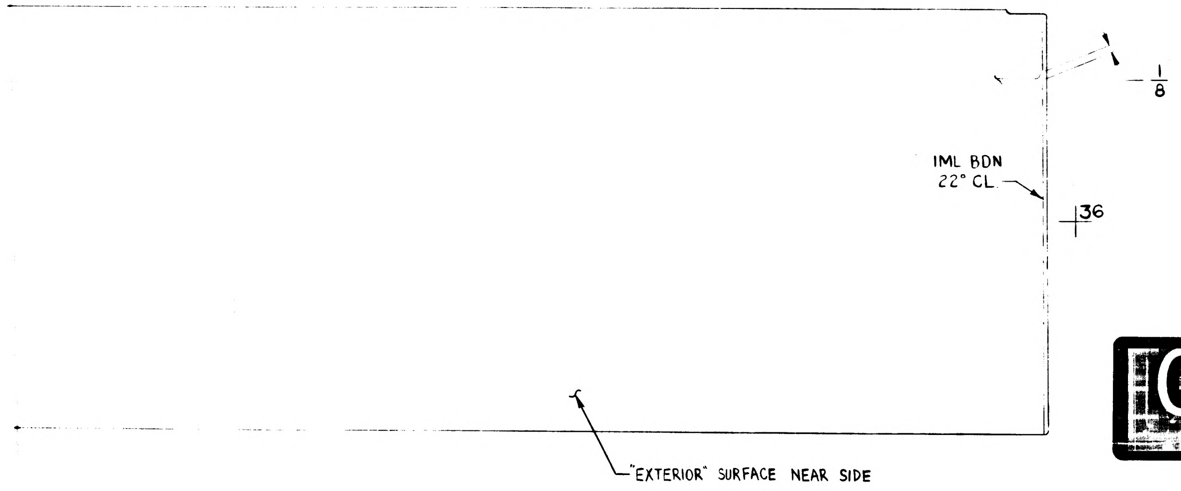
.075-.080 (DRILL #48)
3 HOLES
2
IML BUP
8° CL
-19
BEND R 1/16



.075-.080 (DRILL #48)
3 HOLES
2
IML UP
10° OP
-21
BEND R 1/16



1/2
1/4
IML BUP
IML BDN
130



1/8
IML BDN
22° CL
36
"EXTERIOR" SURFACE NEAR SIDE

NOTES:

1. a. MAKE -11 FROM AL ALY CLAD SHT (SKIN QUALITY) 2024-T3 QQ-A-362. SURFACE DESIGNATED "EXTERIOR" TO BE PREFINISHED WITH ALUMALITE 200/RI/EBIO AND PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROLL PRODUCTS, INC., FARMINGDALE, N.Y.
   b. "INTERIOR" SURFACE TO BE PREFINISHED #76 (LSP-14-9010).
2. NO TOOLING HOLES PERMITTED IN -11.

02/02 NAS 9-1100

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 34 X 70

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 72) = 18 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 4.5 SQ. FT.
PRINT TRIM LINE

LDW280-11184

LDW280-11184

CODE IDENT NO. 26512	
LDW280-11184	SH 3

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE J	CODE IDENT NO. 26512	LDW280-11184	
MODEL OR END ITEM LEM	SCALE FULL		SHEET 3

FOR PHOTO REPRODUCTION K1

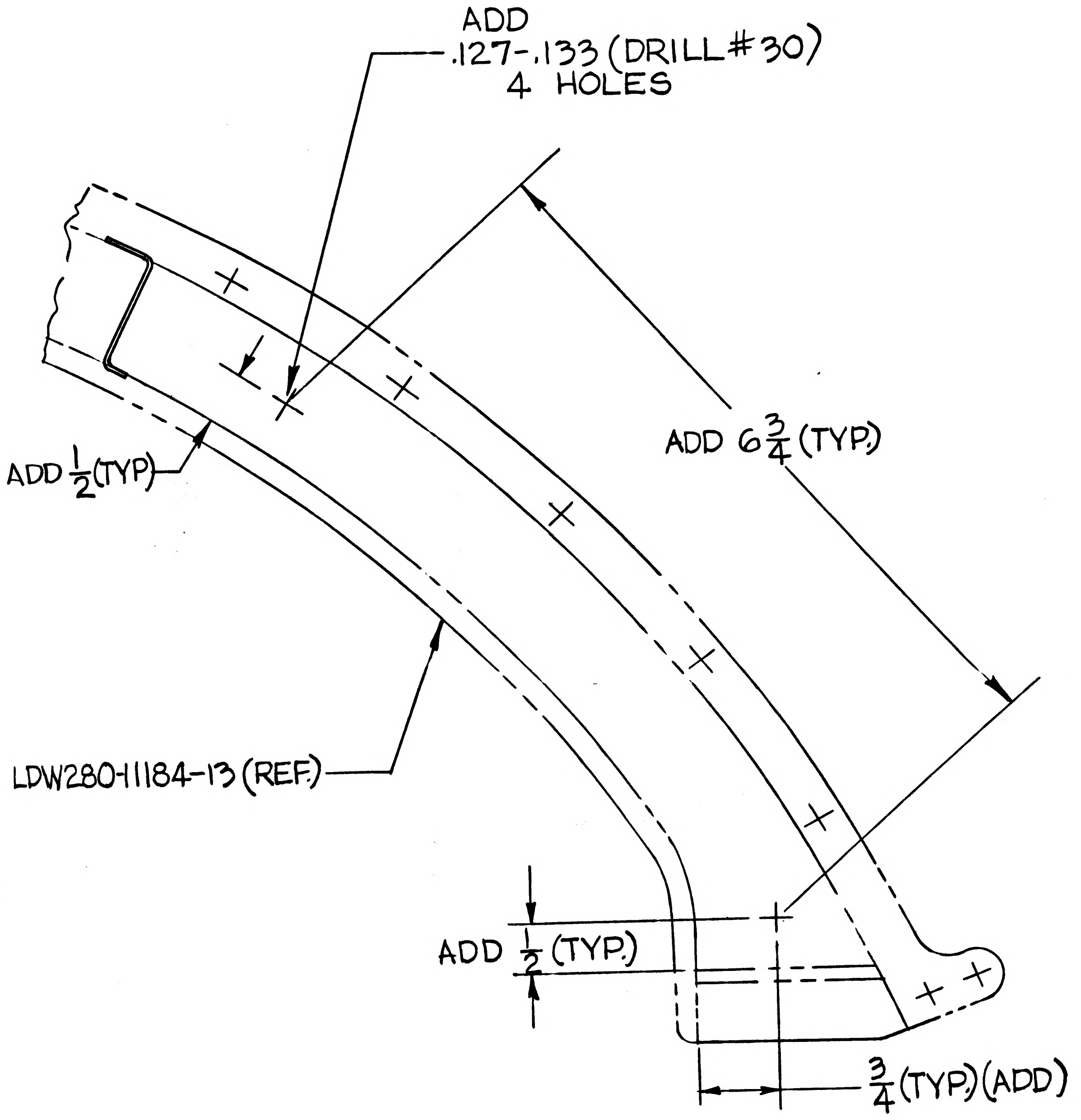
01

ENG 32.2 REV 3-60 *

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW280-11184 | EO NO. A1
CONTROL INFO NO. LEM-3-3767

IN FLD, FOR -13



3

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: TOOLING HOLES REQD. FOR FORMING DET.

DESCRIPTION OF EO: IN FLD., FOR-13, ADDED .127-.133 (DRILL #30) 4 HOLES .

GAEC C EO RELEASE: ⓔ LE

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-1(31)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY	JAP	SWR		~	BM		RMC ⓔ	
DATE	9-16-66	10-3		~	9-10-66	9-12-66	9-13	9-12-66
9-10-66	V.D.I.	~~SUPPORT~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C3
DRAWING TITLE: SKIN CABIN-IMU BEAM ASCENT STAGE THERMAL SHIELD
DRAWING NO. LDW280-11184
EO NO. A1

ISSUED BY LIAISON/ALEC HARVEY (X2151) SECTION V.D.I. GROUP NO. 335 PL 35

NAS 9-1100

LDW280-11185

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	
LEM	LDW280-51870	LEM-1(31)	1 EA
PART NO. LDW280-11185-11, -21, -23, -24		GAEC SCH NO. 30 SH-1	
LEM	LDW280-51184	LEM-1(51)	1 EA
PART NO. LDW280-11185-13, -15, -17 & -19		GAEC SCH NO. 30 SH-1	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -24

GRUMMAN REF INFO

PRIM NO.	4E(001)	
215	MP-8-29-6	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	LUNDSTEN	THERMO	AB FORTK 9/17/66
LAYOUT BY	SHANLEY		
CHECKED BY	J Kartzman 8-17-66		
GR. LEADER	J. Pusattere 8/27/66		
VEH DES INT	8/26		
STRUCTURES	8/26	PROJ ENGR	(AR) 8-27
STRUCTURES	Hilderman 8/26	REL GROUP	Caramanico 9-26-66
WEIGHTS	9-12		

② GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

COLLAR
ASCENT STAGE-CABIN-STAR TRACKER-
IMU BEAM THERMAL SHIELD

SIZE B
CODE IDENT NO. 26512
LDW280-11185
SCALE NONE
SHEET 1.00 OF 3

ENG 77.1 12-65

C.D.R. 8-27-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11185-24		CLIP	AL ALLOY SH	QQ-A-250/5	SEE NOTE 2	.020× 1½ × 2⅜	NONE	NOTE 4	4C
		-23		CLIP			SEE NOTE 2	.020× 1½ × 2⅜		NOTE 4	4C
		-21		RING			SEE NOTE 2	.020×7⅜×8¼		NOTE 4	4C
		-19		CLIP			2024-T3	.020×1½×2⅞		76	4G
		-17		STRAP			SEE NOTE 2	.020×1¼×3		NOTE 4	6G
		-15		STRAP			SEE NOTE 2	.020×1¼×3		NOTE 4	6F
		-13		CLIP			2024-T3	.020×1½×2⅞	NONE	76	7G
		LDW280-11185-11	E	COLLAR	AL ALLOY SH	QQ-A-250/5	2024	.040×8⅜×9⅛	T42	NOTE 6	7B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
76	ALODINE	LSP14-9010
T42	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

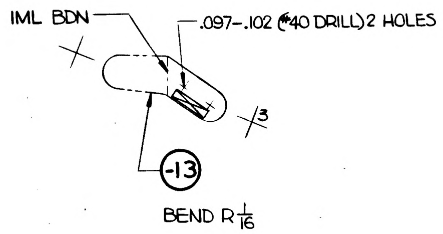
SIZE	CODE IDENT NO.	
B	26512	LDW280-11185

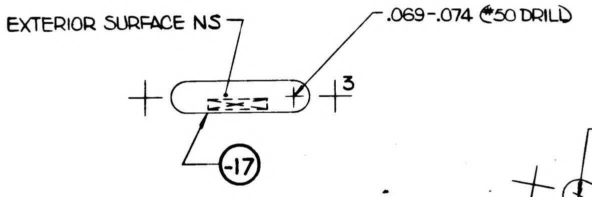
SCALE NONE
SHEET 2.00

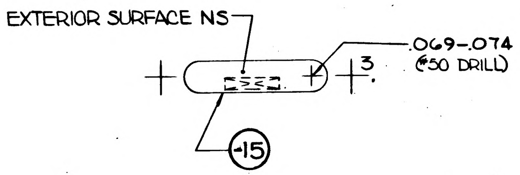
ENG 77.2 7-65

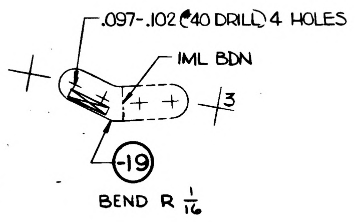
01

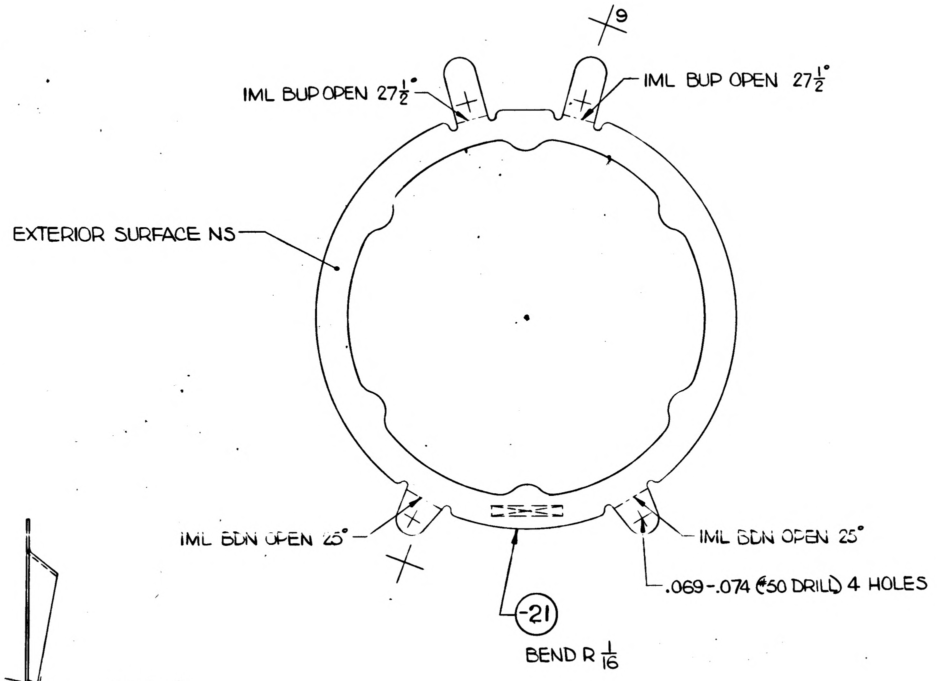
NAS 9-1100

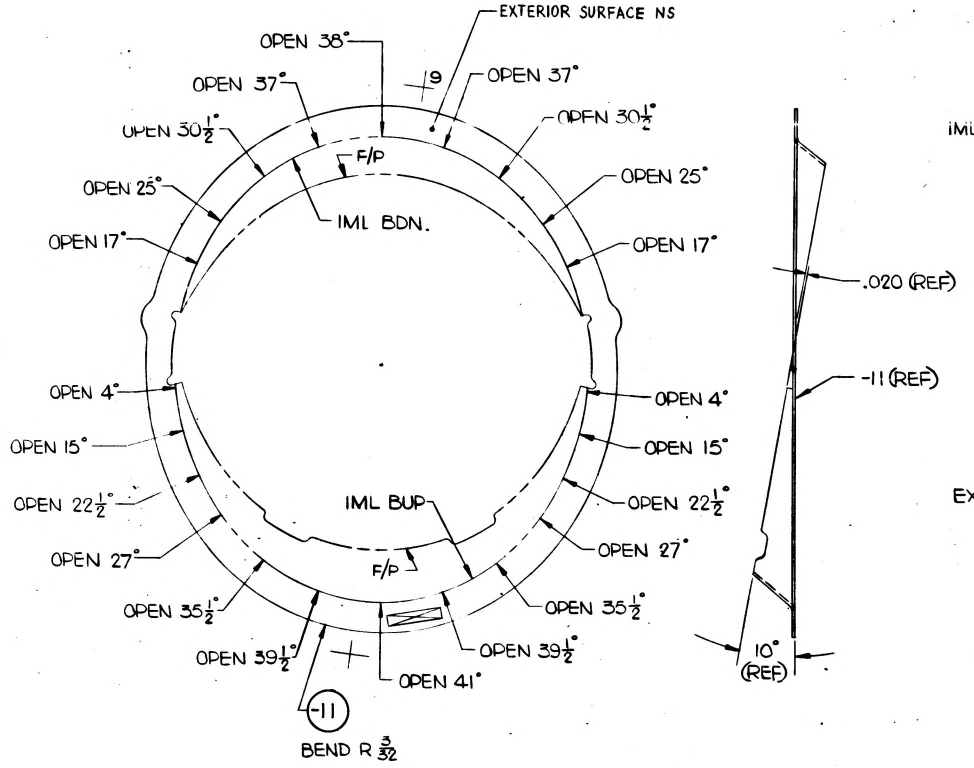

IML BDN
.097-.102 (#40 DRILL) 2 HOLES
3
-13
BEND R $\frac{1}{16}$

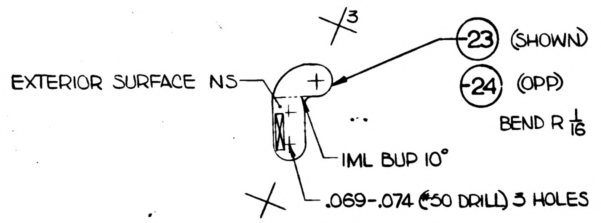

EXTERIOR SURFACE NS
.069-.074 (#50 DRILL)
3
-17


EXTERIOR SURFACE NS
.069-.074 (#50 DRILL)
3
-15


.097-.102 (#40 DRILL) 4 HOLES
IML BDN
3
-19
BEND R $\frac{1}{16}$


9
IML BUP OPEN 27$\frac{1}{2}$°
IML BUP OPEN 27$\frac{1}{2}$°
EXTERIOR SURFACE NS
IML BDN OPEN 25°
IML BDN OPEN 25°
.069-.074 (#50 DRILL) 4 HOLES
-21
BEND R $\frac{1}{16}$


EXTERIOR SURFACE NS
OPEN 38°
9
OPEN 37°
OPEN 37°
OPEN 30$\frac{1}{2}$°
OPEN 30$\frac{1}{2}$°
F/P
OPEN 25°
OPEN 25°
IML BDN.
OPEN 17°
OPEN 17°
.020 (REF)
-11 (REF)
OPEN 4°
OPEN 4°
OPEN 15°
OPEN 15°
OPEN 22$\frac{1}{2}$°
OPEN 22$\frac{1}{2}$°
IML BUP
OPEN 27°
OPEN 27°
F/P
OPEN 35$\frac{1}{2}$°
OPEN 35$\frac{1}{2}$°
OPEN 39$\frac{1}{2}$°
OPEN 39$\frac{1}{2}$°
OPEN 41°
10° (REF)
-11
BEND R $\frac{3}{32}$


3
23 (SHOWN)
24 (OPP)
BEND R $\frac{1}{16}$
EXTERIOR SURFACE NS
IML BUP 10°
.069-.074 (#50 DRILL) 3 HOLES

35
30

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. MAKE LDW280-11185-15,-17,-21,-23 &-24 FROM 2024-T3 ALCLAD BOTH SIDES (SKIN QUALITY). FINISH ALUMALITE 200/R1/EB10 WHICH MAY BE PURCHASED FROM ALUMINUM CO. OF AMERICA (CODE IDENT 01634)
3. THE SURFACE DESIGNATED "EXTERIOR" SHALL BE PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROL PRODUCTS, INC. FARMINGDALE NY
4. REMOVE FINISH ALUMALITE 200/R1/EB10 (ANODIZE) FROM INTERIOR SURFACE & REFINISH WITH #76 (LSP14-9010) ON -15, -17, -21, -23 & -24.
5. ABBREVIATIONS ARE PER MIL STD 12, EXCEPT AS FOLLOWS: IMU = INERTIAL MEASURING UNIT.
6. FOR -11, FINISH: CLEAR SULPHURIC ACID ANODIZE IN ACCURDANCE WITH MIL-A-8625 TYPE II, BOILING WATER SEAL. THE SURFACE DESIGNATED "EXTERIOR" SHALL BE PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROLL PRODUCTS, INC., FARMINGDALE, N.Y. REMOVE CLEAR SULPHURIC ACID ANODIZE FINISH FROM INTERIOR SURFACE AND REFINISH WITH #76 (LSP14-9010).

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD 10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

LEM	SIZE E	CODE IDENT NO. 26512	LDW280-11185	
MODEL OR END ITEM	SCALE FULL			SHEET 3.00

FOR PHOTO REPRODUCTION K3

DWG 734 6-64

LDW280-11185

LDW280-11185

LDW280-11186

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-51184	LEM-1 (31)	1EA
PART NO. LDW280-11186-11-13-15 -17-19 & -21		GAEC SCH NO. 30-	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO		
LAST DASH NO. USED	-21	PRIM NO. 215	FK(00) [illegible]	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ± .020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	T. MACAULAY [illegible]	RELIABILITY	
LAYOUT BY	F. SHANLEY		
CHECKED BY	GB 5-27-66		
GR LEADER	G. Pusateri 8/15/66		
VEH DES INT	[illegible] 8/11		
STRUCTURES	[illegible]	PROJ ENGR	R. W. [illegible] 8-16
STRUCTURES	[illegible] 8/15	REL GROUP	Bo [illegible] 8-24-66
WEIGHTS	[illegible]		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE -
ASCENT STAGE CABIN STAR-TRACKER
[illegible] - THERMAL SHIELD

SIZE B
CODE IDENT NO. 26512
LDW280-11186
SCALE NONE
SHEET 1.00 OF 3

ENG 77.1 12-65

CRD 8-15-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11186-21	E	ANGLE	AL ALLOY SH	QQ-A-250/4	2024	.020X6¾X29¾	T3/T42	76	
		LDW280-11186-19	E	ANGLE	AL ALLOY SH	QQ-A-250/4	2024	.032X1⅝X26¾	T42	76	
		↕ -17	↕	BULKHEAD	↕	QQ-A-250/5	↕	.020X6½X27⅞	SEE NOTES 2,3,4		
		-15		FORMER		QQ-A-250/4		.032X7½X29¾	T3/T42	76	
		-13		ANGLE		QQ-A-250/4		.020X3½X13	T3/T42	76	
		LDW280-11186-11	E	ANGLE	AL ALLOY SH	QQ-A-250/4	2024	.020X2½X8⅛	T3/T42	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T42	AL HEAT TREAT	MIL-H-6088
						76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11186

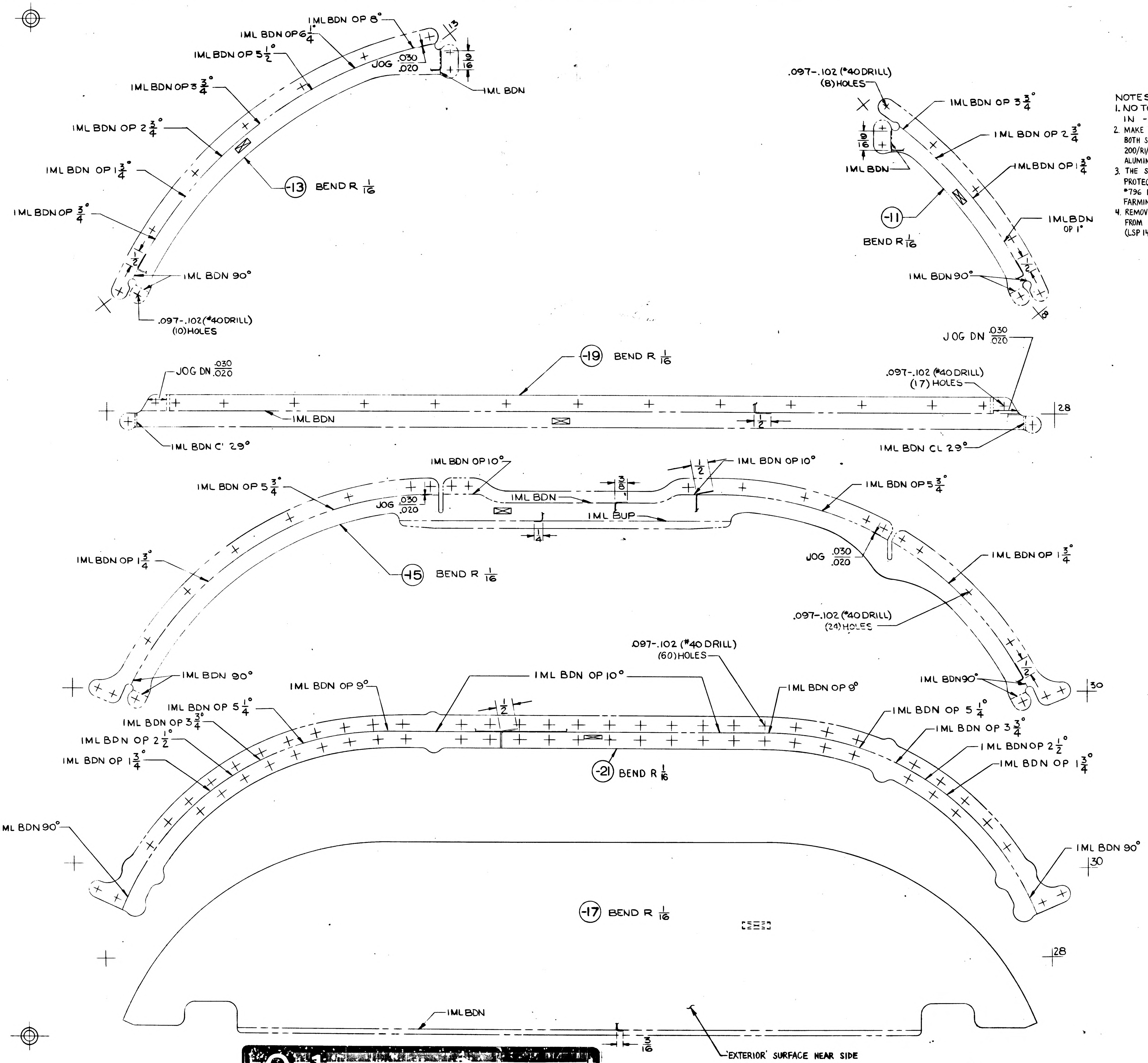
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



IML BDN OP 8°
IML BDN OP 6 1/4
IML BDN OP 5 1/2
IML BDN OP 3 3/4°
IML BDN OP 2 3/4°
IML BDN OP 1 3/4
IML BDN OP 3/4°
IML BDN 90°
IML BDN
JOG .030/.020
9/16
13
-13 BEND R 1/16
.097-.102 (#40 DRILL) (10) HOLES
.097-.102 (#40 DRILL) (8) HOLES
IML BDN OP 3 3/4
IML BDN OP 2 3/4
IML BDN OP 1 3/4
IML BDN OP 1°
-11 BEND R 1/16
IML BDN 90°
8
JOG DN .030/.020
-19 BEND R 1/16
.097-.102 (#40 DRILL) (17) HOLES
IML BDN
IML BDN CL 29°
1/2
28
IML BDN OP 10°
IML BDN OP 5 3/4
IML BDN
IML BUP
3/8
1/4
JOG .030/.020
IML BDN OP 1 3/4
-15 BEND R 1/16
.097-.102 (#40 DRILL) (24) HOLES
IML BDN 90°
30
.097-.102 (#40 DRILL) (60) HOLES
IML BDN OP 10°
IML BDN OP 9°
IML BDN OP 5 1/4
IML BDN OP 3 3/4
IML BDN OP 2 1/2
IML BDN OP 1 3/4
IML BDN 90°
-21 BEND R 1/16
-17 BEND R 1/16
IML BDN
3/16
'EXTERIOR' SURFACE NEAR SIDE
35
30

NOTES:

1. NO TOOLING HOLES PERMITTED IN -17.
2. MAKE LDW280-11186-17 FROM 2024-T3 ALCLAD BOTH SIDES (SKIN QUALITY). FINISH ALUMALITE 200/R1/EB10 WHICH MAY BE PURCHASED FROM ALUMINUM CO. OF AMERICA (CODE IDENT. 01634)
3. THE SURFACE DESIGNATED "EXTERIOR" SHALL BE PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROLL PRODUCTS, INC. FARMINGDALE, N.Y.
4. REMOVE FINISH ALUMALITE 200/R1/EB10 (ANODIZE) FROM INTERIOR SURFACE & REFINISH #76 (LSP 14-9010).

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ [redacted]RY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD 10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LEM	E	26512	LDW280-11186
	SCALE FULL		SHEET 3.00

FOR PHOTO 1 REPRODUCTION B

K2

LDW280-11186

LDW280-11186

LDW280-11187

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-51184	LEM-1(31)	2
PART NO. LDW280-11187-17		GAEC SCH NO. 30-	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-51184	LEM-1(31)	1 EA
PART NO. LDW280-11187-11,-12,-13&-15		GAEC SCH NO. 30-	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -15

GRUMMAN REL INFO

PRIM NO.	E(001)
215	MP 8-16 6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	G.ZARCADOOLAS 5/17/66	RELIABILITY	
LAYOUT BY	F.SHANLEY		
CHECKED BY	GB 5-23-66		
GR LEADER	G. Lueder 8/12/66		
VEH DSGN INT	Paulson 8/12		
STRUCTURES	FB 8/12	PROJ ENGR	R.M. Carbee 8/15
STRUCTURES	Hildeeman 8/13	REL GROUP	Botti 8-27-66
WEIGHTS	Roburk 8-25		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CLIP -
ASCENT STAGE CABIN
IMU BEAM THERMAL SHIELD

SIZE B
CODE IDENT NO. 26512
LDW280-11187
SCALE NONE
SHEET 1.00 OF 3

ENG 77.1 12-65

CR.D 8/13-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11187-17	E	CLIP	AL ALY SH	QQ-A-250/4	2024-T3	.020X1¼X2⅞	NONE	76	5D
		LDW280-11187-15		ANGLE	AL ALY SH	QQ-A-250/4	2024-T3	.020X2½X16	NONE	76	6D
		LDW280-11187-13		ANGLE	AL ALY SH	QQ-A-250/4	2024-T3	.020X2⅜X15⅞	NONE	76	6A
		LDW280-11187-12		CLIP	AL ALY SH	QQ-A-250/4	2024	.032X3¾X4½	T42	76	7D
		LDW280-11187-11	E	CLIP	AL ALY SH	QQ-A-250/4	2024	.032X3¾X4½	T42	76	7D

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T42	AL HEAT TREAT	MIL-H-6088
76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11187

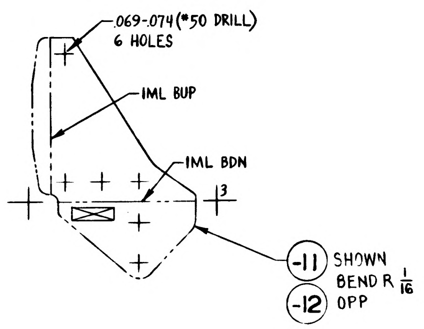
SCALE NONE

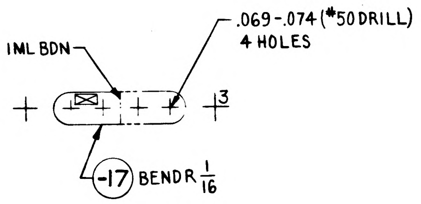
SHEET 2.00

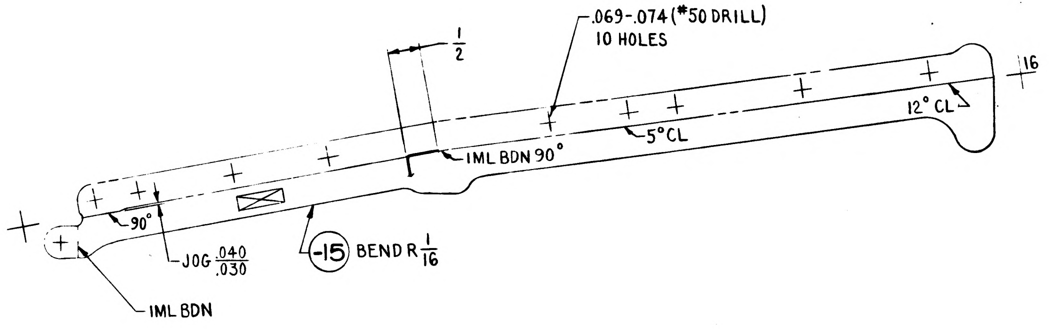
ENG 77.2 7-65

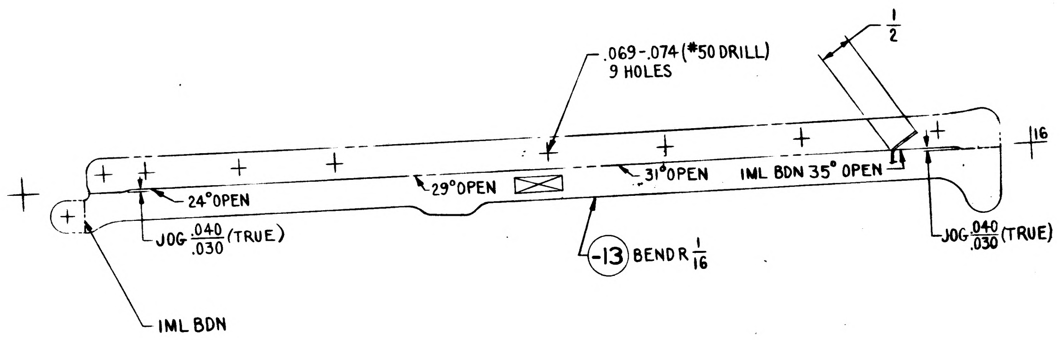
01

NAS 9-1100


.069-.074 (*50 DRILL)
6 HOLES
IML BUP
IML BDN
3
-11 SHOWN
BEND R 1/16
-12 OPP


IML BDN
.069-.074 (*50 DRILL)
4 HOLES
3
-17 BEND R 1/16


1/2
.069-.074 (*50 DRILL)
10 HOLES
16
12° CL
5° CL
IML BDN 90°
90°
JOG .040/.030
-15 BEND R 1/16
IML BDN


1/2
.069-.074 (*50 DRILL)
9 HOLES
16
24° OPEN
29° OPEN
31° OPEN
IML BDN 35° OPEN
JOG .040/.030 (TRUE)
-13 BEND R 1/16
JOG .040/.030 (TRUE)
IML BDN

25
20

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ƒ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	√
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	√

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM: LEM	SIZE: D	CODE IDENT NO.: 26512	LDW280-11187
SCALE FULL			SHEET 3.00

FOR PHOTO REPRODUCTION B K2

01 NAS 9-1100

LDW280-11188

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-51184	LEM1(31)	2
PART NO. LDW280-11188-13		GAEC SCH NO. 30-	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-51184	LEM1(31)	1EA
PART NO. LDW280-11188-11¢-12		GAEC SCH NO. 30-	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00						
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	B	GRUMMAN REL INFO		
LAST DASH NO. USED	-13	PRIM NO.	215	
		LE(001)	MP-8-16-6	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ± .020 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	FITZGERALD 5/11/66	RELIABILITY	
LAYOUT BY	SHANLEY		
CHECKED BY	J Kartzman 5-12-66		
GR.LEADER	C. Guastere		
VEHDES INT	5/12		
STRUCTURES	JI EB/m 8/12	PROJ ENGR	R.M. Carbee (E) 8/15
STRUCTURES	HILDERMAN 8/13	REL GROUP	Bo. T. 8-27-66
WEIGHTS	8.25		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TUBE -
ASCENT STAGE CABIN
IMU BEAM THERMAL SHIELD

SIZE B | CODE IDENT NO. 26512 | LDW280-11188
SCALE NONE | SHEET 1.00 OF 3

CRD 8-15-66

ENG 77.1 12-65

01 NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11138-13	E	TUBE	AL. ALLOY TUBE	WW-T785	2024-T3	5/8 O.D. x .035 x 15 7/8	CM	76	
								LDW280-11188-12	E	TUBE	AL. ALLOY TUBE	WW-T785	2024-T3	5/8 O.D. x .035 x 17 1/2	CM	76	
								LDW280-11188-11	E	TUBE	AL. ALLOY TUBE	WW-T 785	2024-T3	5/8 OD x .035 x 17 1/2	CM	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						CM	CHEM-MILL	LSP14-26100
						76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

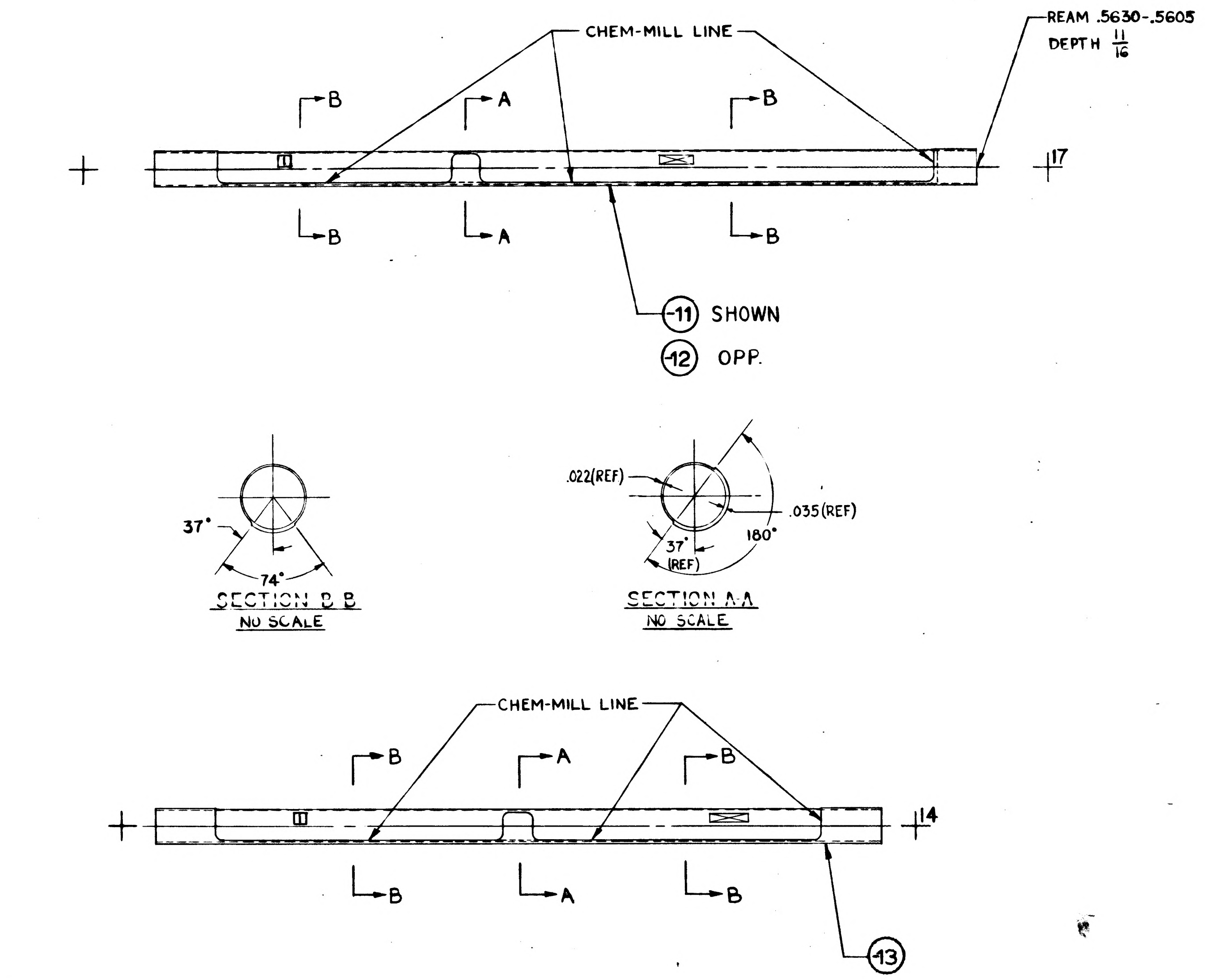
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B | CODE IDENT NO. 26512 | LDW280-11188

SCALE NONE | SHEET 2.00

ENG 77.2 7-65

01 NAS 9-1100



LDW280-11188-11, -12 & -13

CHEM-MILL LINE TOLERANCE
± 1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
± 1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
1	$.022^{+.004}_{-.000}$	.015 (REF.)

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	✓
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

LEM	SIZE D	CODE IDENT NO. 26512	LDW280-11188
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

FOR 2 PHOTO REPRODUCTION 1 K2

LDW280-11188

01

NAS 9-1100

LDW280-11189

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-51184	LEM-1(31)	1 EA

PART NO. LDW280-11189-11 & -13		GAEC SCH NO. 30 SH-1	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00						
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED A-A

LAST DASH NO. USED -13

GRUMMAN REF INFO

PRIM NO. 215 VE(001) MP-8-29-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY T. MACAULAY

LAYOUT BY F. SHANLEY

CHECKED BY H. ROGALEWICZ 8/16/66

GR LEADER J. Pustari 8/23/66

VEH DSGN INT

STRUCTURES JV 8/26

STRUCTURES HILDERMAN 8/26

WEIGHTS 9/12

THERMO B FOR TK 9/17/66

PROJ ENGR R. M. Carbee 8/29

REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SKIN
ASCENT STAGE-CABIN-STARTRACKER
IMU BEAM-THERMAL

SIZE B

CODE IDENT NO. 26512

LDW280-11189

SCALE NONE

SHEET 1.00 OF 3

ENG 77.1 12-65

C.R.D - 8-27-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11189-13	E	COVER	[SEE	NOTE	2]	NOTE5 X 7 1/8 X 15 1/4	NOTE 6	NOTE 3	
								LDW280-11189-11	E	SKIN	[SEE	NOTE	2]	NOTE5 X 16 X 34	NOTE 6	NOTE 3	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						76	ALODINE	LSP14-9010
							HOT FORMING	LSP14-5300

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11189

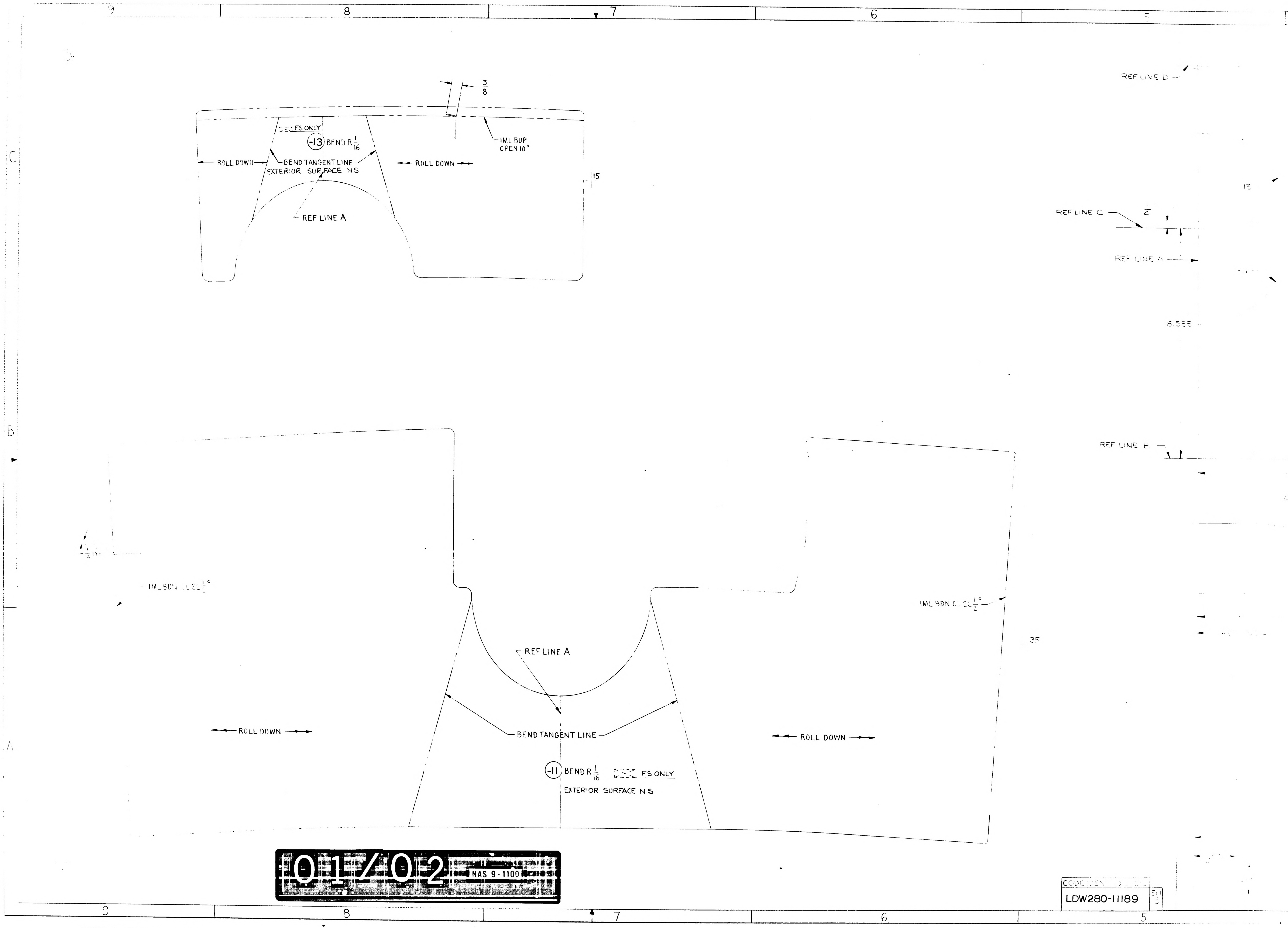
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



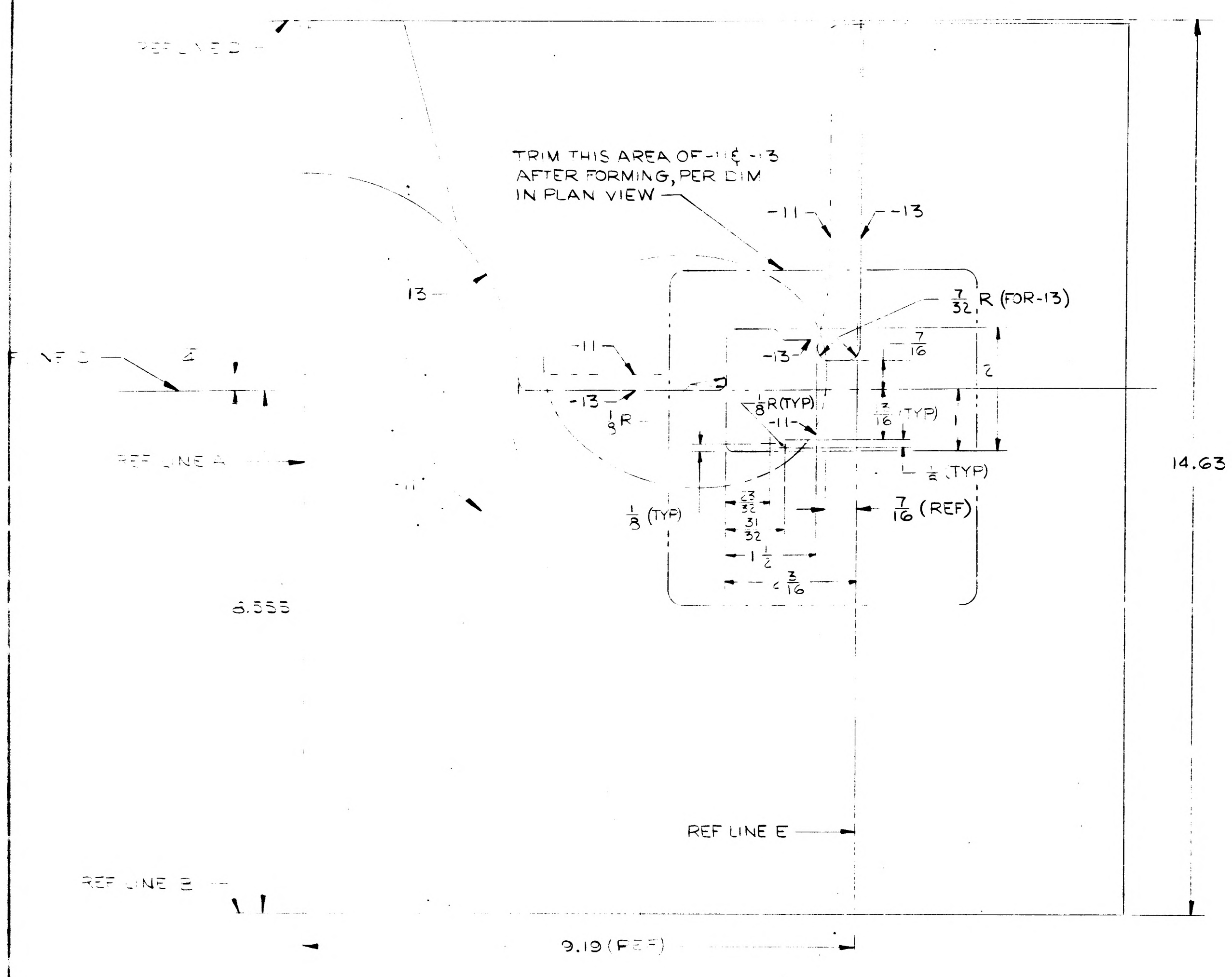
9
8
7
6
5
3/8
FS ONLY
-13 BEND R 1/16
IML BUP OPEN 10°
ROLL DOWN
BEND TANGENT LINE
EXTERIOR SURFACE NS
ROLL DOWN
15
REF LINE A
REF LINE D
13
REF LINE C
1/4
REF LINE A
6.555
REF LINE B
C
B
A
IML BDN 22 1/2°
IML BDN 22 1/2°
35
REF LINE A
BEND TANGENT LINE
ROLL DOWN
ROLL DOWN
-11 BEND R 1/16
FS ONLY
EXTERIOR SURFACE NS

01/02 NAS 9-1100

CODE IDENT

LDW280-11189

SH 3


REF LINE D
TRIM THIS AREA OF -11 & -13
AFTER FORMING, PER DIM
IN PLAN VIEW
-11
-13
13
$\frac{7}{32}$ R (FOR -13)
REF LINE C
-11
-13
-13
$\frac{7}{16}$
2
$\frac{1}{8}$ R
$\frac{1}{8}$ R (TYP)
-11
$\frac{3}{16}$ (TYP)
REF LINE A
$\frac{1}{2}$ (TYP)
$\frac{1}{8}$ (TYP)
$\frac{23}{32}$
$\frac{31}{32}$
$\frac{7}{16}$ (REF)
$1\frac{1}{2}$
$2\frac{3}{16}$
14.63
8.555
REF LINE E
REF LINE B
9.19 (REF)

PLAN VIEW

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS
2. MAKE LDW280-11189-11 & -13 FROM AL ALY CLAD SH (SKIN QUALITY) 2024-T3, QQ-A-250/5. SURFACE DESIGNATED EXTERIOR TO BE PREFINISHED WITH ALUMALITE 200/R1/EB10 AND PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROLL PRODUCTS INC., FARMINGDALE, L.I., N.Y.
3. INTERIOR SURFACE TO BE FINISH #76 (LSP14-9010)
4. REMOVE FINISH ALUMALITE 200/R1/EB10 (ANODIZE) FROM INTERIOR SURFACE & FINISH AS NOTED
5. MATERIAL FOR LDW280-11189-11 & -13 TO BE HAND SELECTED - THICKNESS TO BE .020±.002
6. LDW280-11189-11 & -13 MAY BE HOT FORMED PER LSP14-5300

70
30

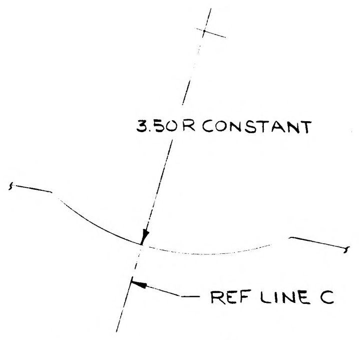
MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
[illegible] STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
$\sqrt[125]{}$ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
$\sqrt[200]{}$ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL $\sqrt{f}$ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	√

DWG SIZE 34 X 36

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X) = SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = SQ. FT.

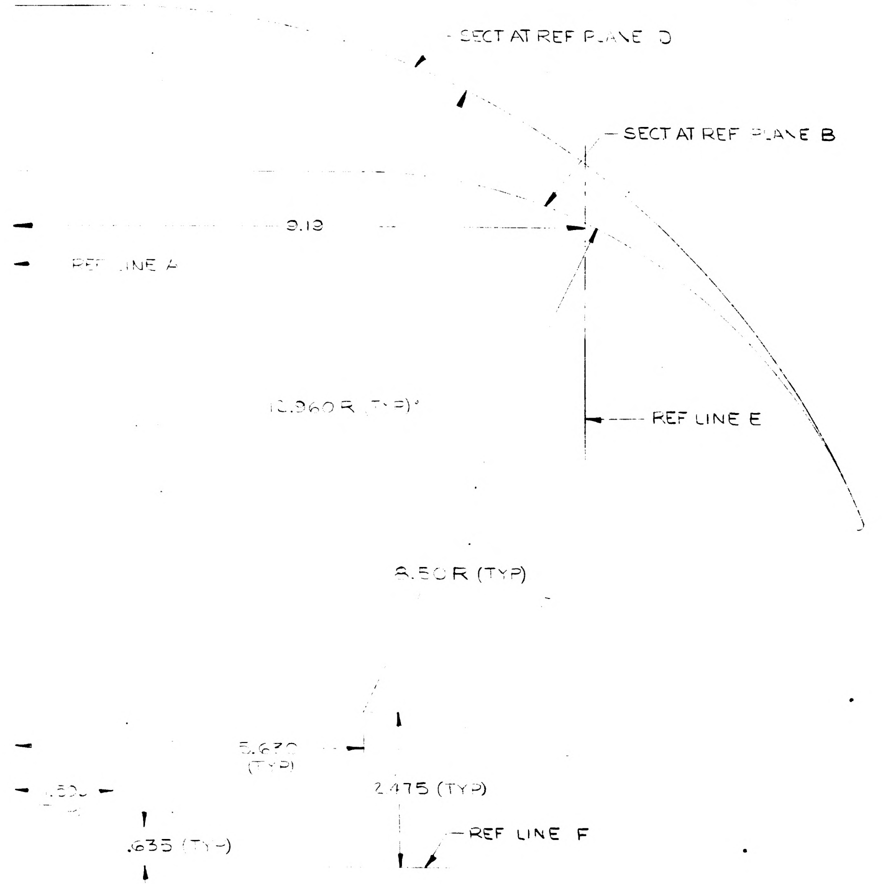
PRINT TRIM LINE

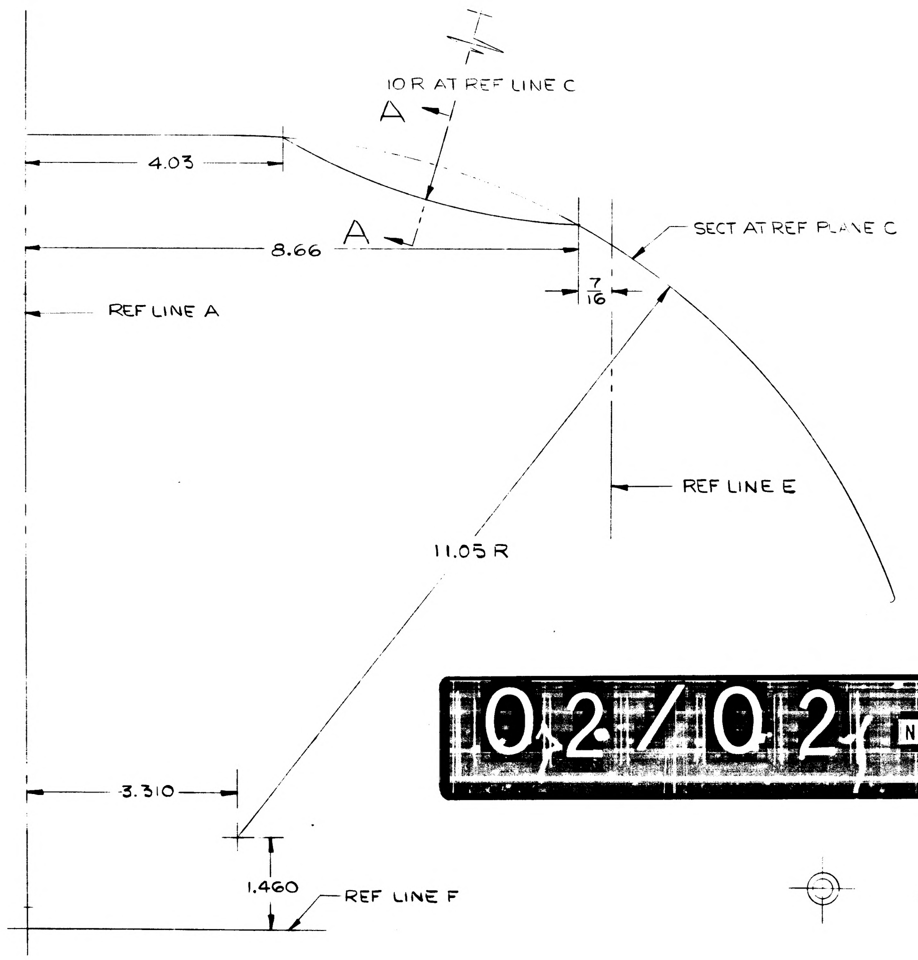
C


3.50 R CONSTANT
REF LINE C

SECTION A-A

B


SECT AT REF PLANE D
SECT AT REF PLANE B
9.19
REF LINE A
12.960 R (TYP)
REF LINE E
8.50 R (TYP)
5.630 (TYP)
.530
2.475 (TYP)
.635 (TYP)
REF LINE F


10 R AT REF LINE C
A
4.03
A
8.66
$\frac{7}{16}$
SECT AT REF PLANE C
REF LINE A
REF LINE E
11.05 R
3.310
1.460
REF LINE F

02/02 NAS 9-1100

LDW280-11189

LDW280-11189

LDW280-11189 SH 3

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
	SIZE J	CODE IDENT NO. 26512	LDW280-11189	
LEM MODEL OR END ITEM	SCALE FULL		SHEET 3	

FOR PHOTO REPRODUCTION B

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11190-13	E	CHANNEL	AL. ALLOY SH.	QQ-A-250/12	7075-0	.071×5×11	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11190	A

SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

LDW280-11190 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53079	LM-15(45)	2
	LDW280-53079	LM-14(44)	2
	LDW280-53079	LM-13(43)	2
	LDW280-53079	LM-12(42)	2
	LDW280-53079	LM-11(41)	2
	LDW280-53079	LM-10(40)	2
	LDW280-53079	LM-9(39)	2
	LDW280-53079	LM-8(38)	2
	LDW280-53079	LM-7(37)	2
	LDW280-53079	LM-6(36)	2
	LDW280-53079	LM-5(35)	2
	LDW280-53079	LM-4(34)	2
LM	LDW280-53079	LM-3(33)	2
PART NO. LDW280-11190-13		GAEC SCH NO. 32	

WORK PACKAGE FUNCTION NO. 110 3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	B	B	A	B
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -13

GRUMMAN REL INFO B

PRIM NO.	JS(601)	
215	MP14	3-28-7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM

DOCUMENTATION TYPE II

DRAWN BY	J.J. LEONARD 5-10-66	RELIABILITY	
LAYOUT BY	J.J. LEONARD 5-10-66		
CHECKED BY	JR		
GP LEADER	R.V PHILLIPS		
VEH DES INT	W. BISCHOFF 5-10-7		
STRUCTURES	F.E.B. 5-16-66	PROJ ENGR	J. ALLEN 5-19-66
STRUCTURES	HILDERMAN 5-14-66	REL GROUP	BOTTI 5-21-66
WEIGHTS	D. ROBESCH 5-19		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHANNEL
ASCENT STAGE-MID SECT-SIDE BEAM ±10.50

SIZE	CODE IDENT NO.		
B	26512	LDW280-11190	B
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

SUPERSEDES LDW280-11190 N/C 5-21-66

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
									RETRACED NO CHANGE LAST REV. NO. CHANGE. ADDED SH. 1.10, 2.00 & 3.00. LOFTED DWG. WAS DIM.	J. BRODA		2-9-	67		
A	1	1.00, 1.10, 3.00						E.O. A1	ON-11 50½° WAS 39½°.	LTA-3, LM-3,4,5,6	✓		J. BRODA 3-20-67		
	2	1.00, 1.10, 2.00, 3.00						E.O. A2	ADDED -13 REMOVED -11	LM-3 THRU-15		-11			
	3	1.00 1.10						E.O. A3	ON SH. 1.00 ADDED TO EFFECTIVITY OF -13 LM-7(37) THRU LM-15(45)	LM-7 THRU-15	NOT	REQ'D			
B	1	1.00, 1.10, 3.00						E.O. B1	TO -11 ADDED E19 DRILL (2 HOLES). TO -11 ADDED E.O. TO RECORD BLOCK FOR LTA-3.	LM-3 THRU-15 LTA-3	✓				
	2	1.10						E.O. B2	REVISION OF E.O. B1 ON -13 ADDED 15/32 WAS 15/16. ADDED E.O. TO RECORD BLOCK FOR LTA-3 -13 WAS -11.						
	3	1.10						LE0280-385	ON INCORP OF E.O. B1 IN FLD. DWG. & DESCRIPT. -11 S/B -13		NOT	REQ'D			
	4	1.10						(A, B, R)	REF E.O. B1, 2, 3 LTA-3 RECORD PART OF E.O. NOT APPLICABLE	NOT REQ'D.					

CHG APPROVED

LTR	GROUP LDR	VEH. DES. INT.	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY				
B	—	R V Phillips 3-23	GW 3-21							

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

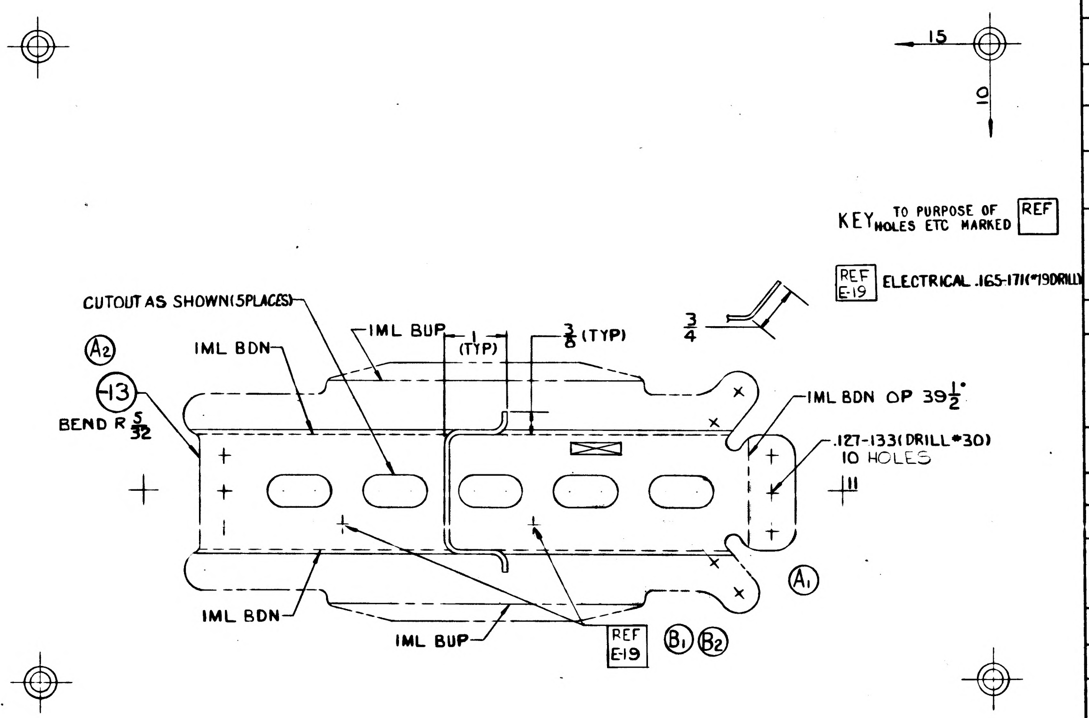
SIZE	CODE IDENT NO.		
B	26512	LDW280-11190	B
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PART.



15
10
KEY TO PURPOSE OF HOLES ETC MARKED REF
REF E-19 ELECTRICAL .165-.171(#19DRILL)
3/4
CUTOUT AS SHOWN(5PLACES)
IML BUP
1 (TYP)
3/8 (TYP)
A2
IML BDN
13
BEND R 5/32
IML BDN OP 39 1/2°
.127-.133(DRILL #30) 10 HOLES
11
A1
IML BDN
IML BUP
REF E-19
B1
B2

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015 .031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

	SIZE	CODE IDENT NO.		
LM	C	26512	LDW280-11190	B
MODEL OR END ITEM	SCALE		SHEET 3.00	

LDW280-11190 B

FOR PHOTO REPRODUCTION

TR EG

NAS 9-1100

01

LDW280-11191 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-25110	LTA-1(11)	1
PART NO. LDW280-11191-13		GAEC SCH NO. 31-2	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-54075	LEM-6(36)	1
	LDW280-54075	LEM-5(35)	1
	LDW280-54075	LEM-4(34)	1
	LDW280-53075	LEM-3(33)	1
	LDW280-52075	LEM-2(32)	1
	LDW280-51075	LEM-1(31)	1
LEM	LDW280-28075	LTA-8(18)	1
PART NO. LDW280-11191-17		GAEC SCH NO. 31-3	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-54075	LEM-6(36)	1
	LDW280-54075	LEM-5(35)	1
	LDW280-54075	LEM-4(34)	1
	LDW280-53075	LEM-3(33)	1
	LDW250-52075	LEM-2(32)	1
	LDW280-51075	LEM-1(31)	1
	LDW280-28075	LTA-8(18)	1
LEM	LTM280-25110	LTA-1(11)	1
PART NO. LDW280-11191-11		GAEC SCH NO. 31-3 31-2	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	B	B	B	B
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -17

GRUMMAN REL INFO A/B

PRIM NO. VE(001) 207 MP12 A

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM #1

DOCUMENTATION TYPE II

DRAWN BY	OCONNELL 5-23-66	RELIABILITY	
LAYOUT BY	HARRIGAN		
CHECKED BY	CARATOLI-5-24-66		
GROUP LDR			
VEH. DES. INT	[illegible]		
STRUCTURE	[illegible]	PROJ ENGR	Plunkett 6-66
STRUCTURE		REL GROUP	[illegible] 6-16
WEIGHT	[illegible]		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT
ASCENT STAGE - CABIN - FRONT FACE
EQUIPMENT LINES

SIZE B

CODE IDENT NO. 26512

LDW280-11191 B

SCALE NONE

SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00, 1.10, 2.00, 3.00						EO A1	EO A1 - INITIAL DWG RELEASE - PARTS MADE PER EO	NOTED	NOT	REQD	O CONNELL 5-23-66		
	2	1.00, 1.10							FOR LEM-1 & LEM-2, N/A LDW280-51075 AND LDW280-52075 WAS LDW280-28075.	LEM-1-2			JAEGGI 5-24-66 7.A		
	3	1, 1.10, 2 & 3		Ⓡ					REMOVED EFFECTIVITY LTA-8(18), LEM-1(31) & LEM-2(32) FROM -13; ADDED -15; ADDED LEM-3 THRU LEM-6 EFFECTIVITIES FOR -11 & FOR -11 REQD/MOD(1) WAS(2)	LTA-8 LEM-1 & -2	NOT	REQD	SVOBODA 5-31-66 7.A.		
B	1	1, 1.10, 2 & 3						EOB1	IN FIELD AND B/M -17 WAS -15		LTA-8 LEM-1, 2, 3, 4, 5 & 6	-15	RIHA 8-8-66 Rs.	╳	╳

CHG APPROVED	LTR	GROUP LDR	VEH.DES.INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY				
	A										
	B										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11191	B
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11191-17	E	SUPPORT	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 × 2¼ × 2⅞	NONE	88	
		LDW280-11191-13	E	SUPPORT	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 × 2¼ × 2⅞	NONE	88	
		LDW280-11191-11	E	SUPPORT	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 × 1½ × 2¼	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	SP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

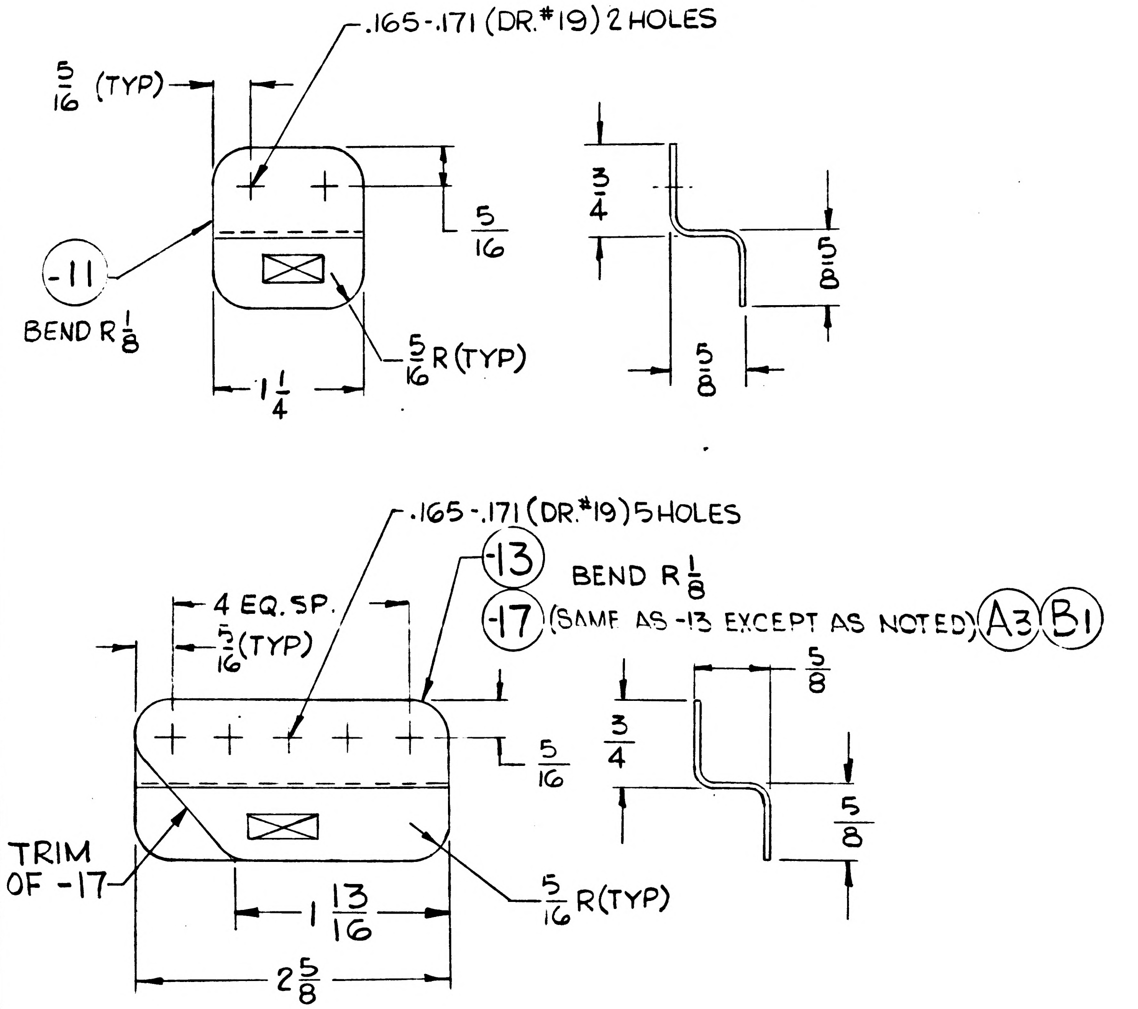
SIZE B
CODE IDENT NO. 26512
LDW280-11191
B
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS.



.165-.171 (DR.#19) 2 HOLES
5/16 (TYP)
5/16
-11
BEND R 1/8
5/16 R (TYP)
1 1/4
3/4
5/8
5/8
.165-.171 (DR.#19) 5 HOLES
-13 BEND R 1/8
-17 (SAME AS -13 EXCEPT AS NOTED) A3 B1
4 EQ. SP.
5/16 (TYP)
5/16
TRIM OF -17
1 13/16
2 5/8
5/16 R (TYP)
3/4
5/8
5/8

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	√	FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.		EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.		ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.			
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING		REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
		SYMBOL √ DENOTES SURFACE TO BE MACHINED	
		TOLERANCE ON FLANGES IS ± 1/32	√
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.		LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10			
200√ FOR ALL DRILLED HOLES			
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS			

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11191	B
SCALE FULL		SHEET 3.00	

ENG 73.11 12-64

01 NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 526

CONTROL INFO NO. LDW280 A5914

TO THE FOLLOWING DRAWING'S LISTED BELOW & THEIR DASH NUMBERS * THAT ARE EFFECTIVE ON LM-6(36) ADD EFFECTIVITIES FOR LM-7(37) LM-8(38), LM-9(39), LM-10(40), LM-11(41), LM-12(42), LM-13(43), LM-14(44), LM-15(45). QUANTITIES & NK REMAIN THE SAME AS LM-6(36.)

	DRAWING No.	DASH NO *	SHT NO.	TITLE	NEXT ASSY
✓	LDW280-10245	-17, -19	C4	ANGLE CAB. L.H WIND	LDW280-23074
✓	-10261	-13,-15,-17,-19,-20	C1	CHAN. M/S BEAM	-54030
✓	-10300	-13, -15	D2	CLIP RH ZO FRM LWR	-54020
✓	-10310	-15	D1	CHAN CAB. WIND AREA	-23074
✓	-10380	-15	C1	SHIM FWD HATCH HINGE	-54083
✓	-10561	-11	A1	WEB M/S ENG SPT. FWD	-23077
✓	-10702	-17	A1	DRLR DOCK TUN.	-23069
✓	-10830	ULTRA SONIC TOL PANELS	B1	FAB. PROC-ECS-HE MOD	H23143
✓	-10833	-11, -13, -15	B2	WEB ECS HEAT EXC SPT	-23253
✓	-10904	-11, -13, -17	C3	SUPT IMU BEAM WIRING	-23031
✓	-23168	-1, -3, -5 & -7	A2	HATCH ASSY DOCK TUNNEL	-23069
✓	M-23139	-1	B1	VEE ASSY CAB NVP-LAP	-23066
✓	-11066	-11, -12	A1	CLIP S BAND ANTENNA	-23246
✓	-11110	-11	C1	FTG AEB CAGE STRUT	-23039
✓	-11117	-17, -19	B1	CHANNEL X253 DECK	-23029
✓	-11117	-11, -13 & -15		CHANNEL X253 DECK	-53476
✓	-11159	-15, -17, -18	B2	ZEE SHIELD X253.5	-53476
✓	-11191	-11	C1	SUPT F.F. EQUIP LINES	-54075
	-11351	-1 & -3	B2	BRACKET ASSY	-23488
	-53078	-1	A7	BEAM INSTL MS 210.25	-54012
	H23903	-5	C4	SKIRT ASSY OXID	LDW280-23901
	M10555	-1, -2	A1	CLIP LONGERON CABIN	-23048
✓	-28753	-1	A4	SKIN ASSY DS SC	-28750
	-23066	-1	B4	FR IN CAB NA BAS SUP	-54002
✓	-23511	NONE	B3	JIG DATA-REF DWG.	NONE
	M11108	-1	B1	BOLT ZO R.H SHIELD SUPT	-51199
✓	-25709	-1	A2	SHIELD INSTL DS EC	-25661
✓	-28362	-3	A2	STRAP ASSY CABIN	-54357
✓	-28645	-3	A2	ACCESS COV INST PLSS	-54553

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LM-7(37) THRU LM-15(45) EFF.

GAEC EO RELEASE: Ⓡ 3 JK 3/27/7

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-7(37) THRU	LM-15(45)

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQD (REWORK / SCRAP)

APPROVED BY: DATE 13 MC 67 6 VDI | SUPPORT | RELIAB. GROUP | GROUP LEADER — — | STRESS GROUP 3/20 | LIAISON ENGRG | PROJ ENGRG 3-23-67 3/24/67

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO.: LEO 280

EO NO.: 526

ISSUED BY A. MAICA X1392 SECTION VEH. DES. STRUC GROUP NO. 535 PL 35

01 NAS 9-1100

LDW280-11192 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	SEE NOTE #2	DESIGN VERIF (70)	1 EA
↑	SEE NOTE #2	QUAL TEST (70)	1 EA
	LDW280-23210	LM-6 (36)	1 EA
	↑	LM-5 (35)	1 EA
		LM-4 (34)	1 EA
↓	↓	LM-3 (31)	1 EA
LM	LDW280-23210	LTA-3 (13)	1 EA

PART NO. LDW280-11192-11¢-12

GAEC SCH NO. 31-4

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

GRUMMAN REL INFO A

PRIM NO. 215

LAST DASH NO. USED -12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.010 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY	J.OGLIK 5-12-66	RELIABILITY	
LAYOUT BY	J.OGLIK 5-12		
CHECKED BY			
GR LEADER	PUSATERI 5-13		
VEH DES INT	BISCHOFF 5-14		
STRUCTURES	F. BRUCE-WHITMAN 5-16	PROJ ENGR	J. ALBER-CARBEE 5-19
STRUCTURES	HILDERMAN 5-16	REL GROUP	BOTTI 5-21
WEIGHTS			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

⑧ INTERCOSTAL
ASCENT STAGE-FRONT FACE BEACON LIGHT

SIZE B

CODE IDENT NO. 26512

LDW280-11192 A

SCALE NONE

SHEET 1.00 OF 3

ENG 77.1 12-65

SUPERSEDES LDW280-11192 NO CHANGE 5-12-66

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE LAST REV NO CHANGE LOFTED DWG WAS DIM. SH 1 OF 3 WAS 1 OF 1 ADDED SH 1.10, 2.00 & 3.00				MELMED 9-13-66		
A	1	1.10						LEO280-179 Ⓡ	ADDED QUAL TEST & DESIGN VERIFICATION AND N/A REF NOTE 2	QUAL TEST DESIGN VERIF	NOT	REQD	MELMED 9-12-66 EG		

FOR CONTINUATION OF REVISIONS SEE SHEET ________

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-11192	A
SCALE NONE		SHEET 1.10	

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11192-12	E	INTERCOSTAL	AL ALY SH	QQ-A-250/12	7075-T6	.028 x 5¼ x 6⅞	NONE	88	
								LDW280-11192-11	E	INTERCOSTAL	AL ALY SH	QQ-A-250/12	7075-T6	.023 x 5¼ x 6⅞	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11192	A

SCALE NONE

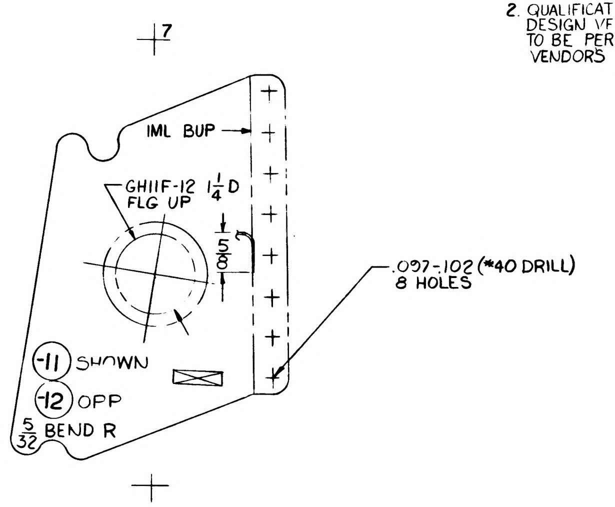
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

TR OK WM



NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. QUALIFICATION TEST AND DESIGN VERIFICATION TEST TO BE PERFORMED AT VENDORS FACILITIES.

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LEM	C	26512	LDW280-11192	A
	SCALE FULL		SHEET 3.00	

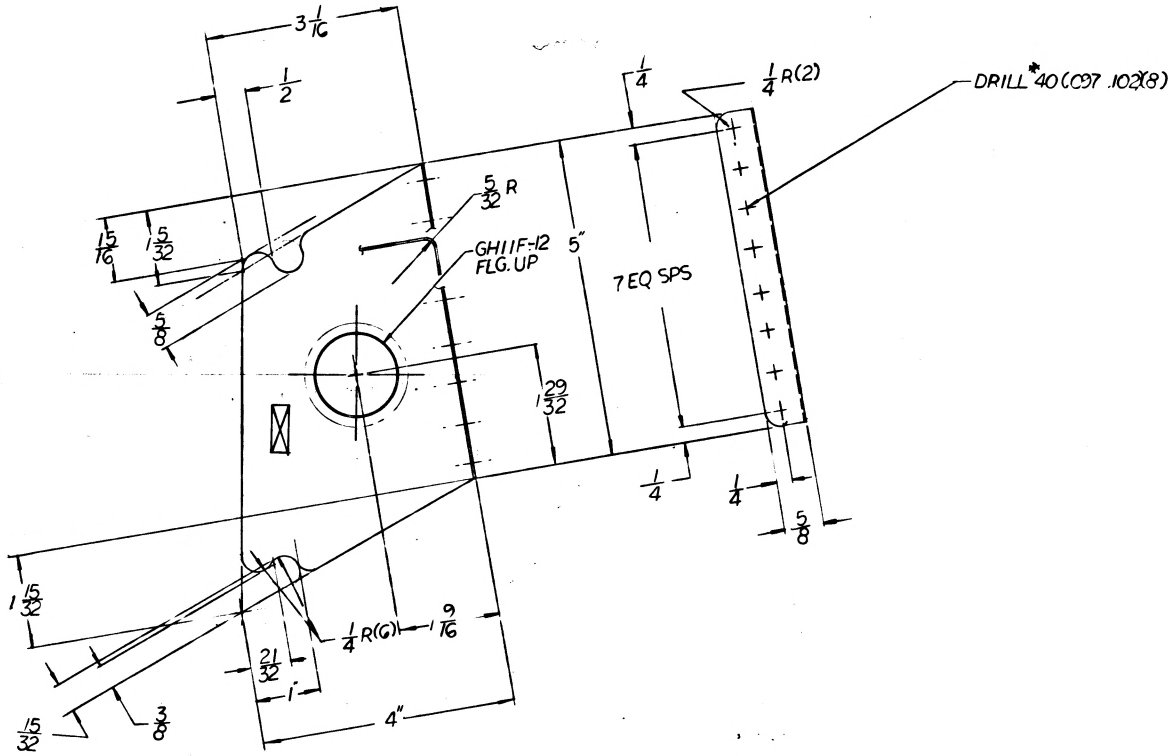
LDW280-11192 A

FOR PHOTO1 REPRODUCTION

01 NAS 9-1100

REVISIONS														
REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION					DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MODULE NUMBER	DISPOSITION OF EXIST PARTS		ENGRG APPD	GOVT APPD
			GRUMMAN INFO ONLY DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER				RE-WORK	SCRAP		

MANUFACTURING OPERATIONS	
NOTES CHECKED ✓ APPLY TO THIS DWG.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.	✓
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.	
200 FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.	✓
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ƒ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓



LDW280-11192-11 SHN.

LDW280-11192-12 OPP.

NAS 9-1100

01

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	LSP 14-9030	

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

ENG. 603 8-63

QTY REQ'D PER ASSY			PART OR IDENTIFYING NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE
		1	LDW280-11192-12	E		INTERCOSTAL	AL ALLOY SH	7075 T6	QQ-A-283	.028X5X6 7/8	NONE	88		
		1	LDW280-11192-11	E		INTERCOSTAL	AL ALLOY SH	7075 T6	QQ-A-283	.028X5X6 7/8	NONE	88		

TO BE REDRAWN ON PRODUCTION FORMAT 3

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
LEM	LDW280-23210	LEM 6 (36)	1 EA
↓	↓	LEM 5 (35)	↓
		LEM 4 (34)	
		LEM 3 (31)	
LEM	LDW280-23210	LTA 3 (13)	1 EA

PART NO. LDW280-11192-11, -12 GRUMMAN SCH INFO 31-4

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
±1/32 ±.010 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

GRUMMAN REL INFO
PRIM. NO. 215 | 6(001) MP12 | RS-1

DRAWN BY	J.J. OGOLIK	5-24
CHECKED BY		
LAYOUT BY	J.J. OGOLIK	5-12
GP LEADER		5/13
VDI		5/19
STRUCT		5/18
STRUCT		5/16
WEIGHTS		5-1
RELIABILITY		
PROJECT		5-19
RELEASE		5-21-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

INTERCOSTAL
ASCENT STAGE FRONT FACE BEACON LIGHT

CONTRACT NO. NAS 9-1100 DOCUMENTATION TYPE II

CODE IDENT NO. 26512 SIZE F LDW280-11192

SCALE FULL LINE ITEM 1 SHEET 1 OF 1

25

ENG 30.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO LEO280 | EO NO 297
CONTROL INFO NO. LDW280 A 0659

TO THE FOLLOWING DRAWINGS LISTED BELOW AND THEIR DASH NUMBERS* THAT ARE EFFECTIVE ON LEM-6(36) ADD EFFECTIVITIES FOR LEM-7(37), LEM-8(38), LEM-9(39), LEM-10(40), LEM-11(41), LEM-12(42), LEM-13(43), LEM-14(44) AND LEM-15(45) QUANTITIES AND NEXT ASSEMBLIES REMAIN SAME AS LEM-4(34)

DRAWING NUMBER	CHANGE NUMBER	TITLE
LDW280-11161	B1	SEE DRAWING
-11163	A1	
P 11168	B1	
-11169	A1	
-11170	A1	
-11178	A1	
P 11180	B1	
-11181	B1	
-11182	A1	
-11183	A1	
-11192	B1	
-11204	A1	
-11280	A2	
-11284	B1	
-11294	A5	
-11296	B2	
-11297	B1	
-11300	B1	
-11301	B1	
-11305	B1	
-11316	A1	
-11320	B1	
-11322	A1	
-11337	B1	
LDW280-11374	A3	
-		
~~LDW280~~		SEE DRAWING

* USE APPLICABLE DASH NUMBERS IN DESCRIPTION OF E.O.

3

DETAIL SPEC REQ		CL III ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO: FOR DASH * ADDED LEM-7 THRU LEM-15 EFF.

GAEC EO RELEASE: FR 10/17/66

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-7(37) LEM	8(38) LEM-9(39)
LEM		LEM-10(40) LEM-11	(41) LEM-12(42)
LEM		LEM-13(43) LEM-14	(44) LEM-15(45)

DRAWING CHANGE REQ'D: ✓ REVISE DWG | RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK | SCRAP)

APPROVED BY: RP | — | — | (W) | RM (WR) | AC
DATE: 9/23/66 | — | 9-19 | 10-17-66 | 10-3-66
VDI | SUPPORT | RELIAB. GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG | EDIT

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO: LEO280
EO NO.: 297

ISSUED BY L. DE TURRIS 7-18-66 X1441 SECTION VEHICLE DESIGN INT. GROUP NO. 280 PL 35 EN

01
NAS 9-1100

QTY PER ASSEMBLY -3	QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
			MS20426AD3	E	RIVET	STD PART						
4	3		NAS697A08		PLATE NUT	STD PART						
1			LDW280-11193-23		SUPPORT	AL ALLOY SH	QQ-A-250/4	2024-T3	.063×2 7/8 ×6 1/4	T42	88	
			-19		TEE	AL.ALY EXTR.	QQ-A-200/3	2024-T4	DIE#62248 ×1	NONE	88	
			-17		TEE	AL.ALY. EXTR.	QQ-A-200/3	2024-T4	DIE#62248 ×1	NONE	88	
			-15		ANGLE	AL.ALLOY SH.	QQ-A-250/4	2024-T3	.040×2 ×2 1/8	NONE	88	
	1		LDW280-11193-11		SUPPORT	AL.ALLOY SH	QQ-A-250/4	2024-T3	.040×2 5/8 ×4 7/8	NONE	88	
			LDW280-11193-3		SUP'T. ASSY					NONE	NONE	
			LDW280-11193-1	E	SUP'T ASSY					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T42	AL HEAT TREAT	MIL-H-6088
88	ANODIZE	LSP14-9

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11193	B

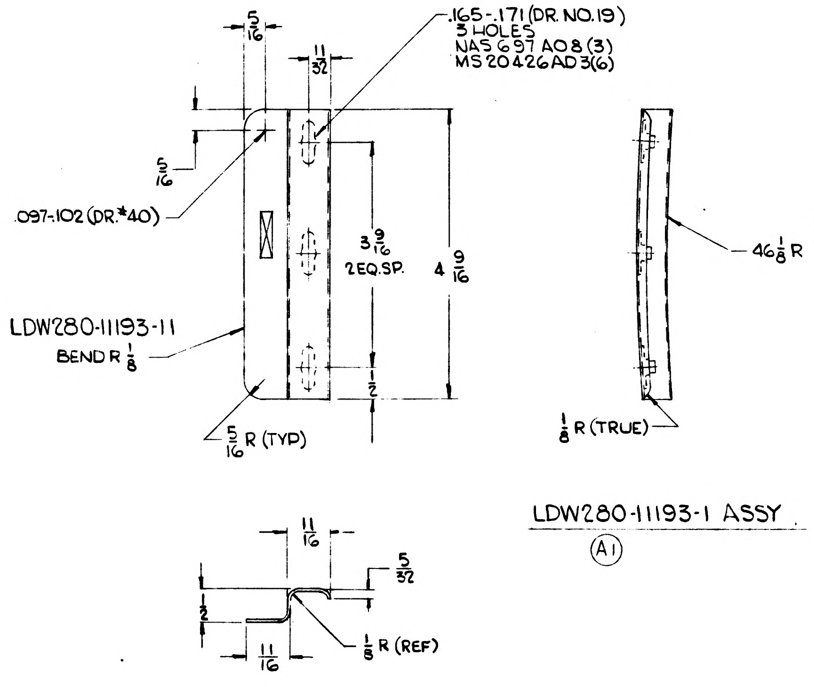
SCALE NONE

SHEET 2.00

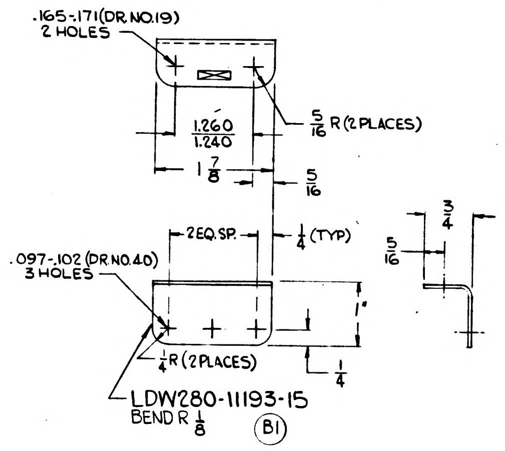
ENG 77.2 7-65

01

NAS 9-1100



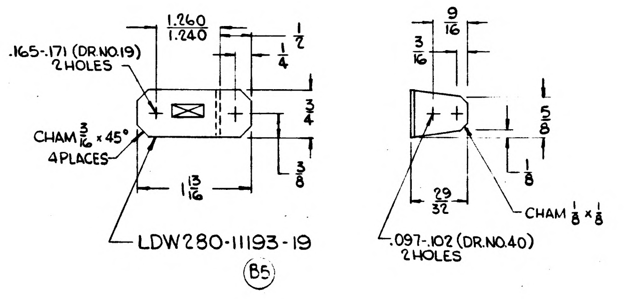
.165-.171 (DR. NO.19)
3 HOLES
NAS 697 A08 (3)
MS 20426AD3 (6)
.097-.102 (DR.#40)
3 9/16 2 EQ.SP.
4 9/16
LDW280-11193-11
BEND R 1/8
5/16 R (TYP)
46 1/8 R +1/-1/16
1/8 R (TRUE)
1/8 R (REF)
LDW280-11193-1 ASSY
A1



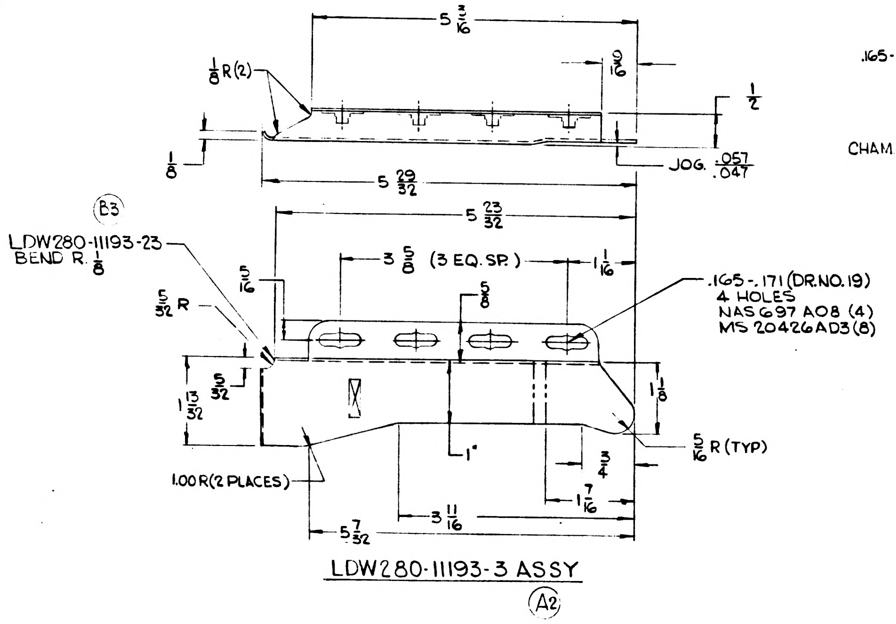
.165-.171 (DR. NO.19)
2 HOLES
5/16 R (2 PLACES)
1.260 / 1.240
1 7/8
2 EQ.SP.
1/4 (TYP)
.097-.102 (DR. NO.40)
3 HOLES
1/4 R (2 PLACES)
1°
LDW280-11193-15
BEND R 1/8
B1

NOTE:

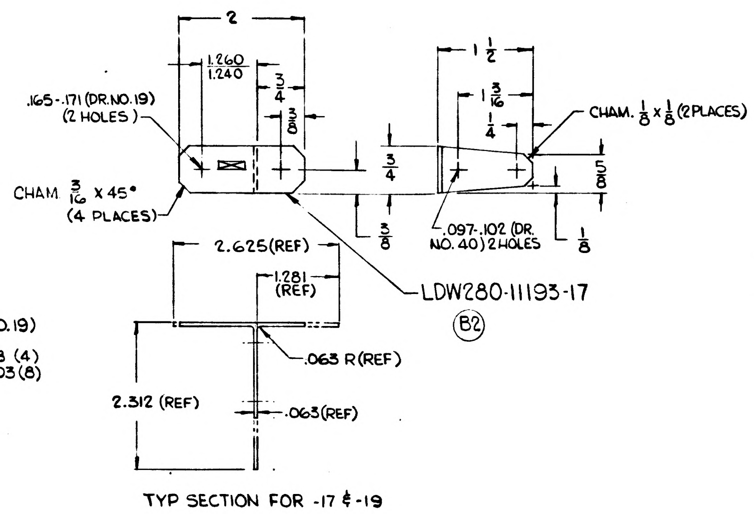
1. NO TOOLING HOLES PERMITTED IN PARTS.



.165-.171 (DR. NO.19)
2 HOLES
1.260 / 1.240
CHAM 3/16 x 45°
4 PLACES
1 13/16
LDW280-11193-19
B5
CHAM 1/8 x 1/8
29/32
.097-.102 (DR. NO.40)
2 HOLES



5 3/16
1/8 R (2)
9/16
1/2
JOG .057/.047
5 29/32
B3
5 23/32
LDW280-11193-23
BEND R 1/8
3 5/8 (3 EQ. SP.)
.165-.171 (DR. NO.19)
4 HOLES
NAS 697 A08 (4)
MS 20426AD3 (8)
5/32 R
1 13/32
1.00 R (2 PLACES)
1°
5/16 R (TYP)
3 11/16
1 7/16
5 7/32
LDW280-11193-3 ASSY
A2



2
1.260 / 1.240
.165-.171 (DR. NO.19)
(2 HOLES)
CHAM 3/16 x 45°
(4 PLACES)
1 1/2
1 3/16
CHAM. 1/8 x 1/8 (2 PLACES)
.097-.102 (DR. NO. 40) 2 HOLES
LDW280-11193-17
B2
2.625 (REF)
1.281 (REF)
.063 R (REF)
2.312 (REF)
.063 (REF)
TYP SECTION FOR -17 & -19

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	√
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE F	CODE IDENT NO. 26512	LDW280-11193	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.30	

01 NAS 9-1100

LDW280-11193 C

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53074	LEM-3(33)	1
↑	LDW280-23074	LEM-6(36)	1
	↑	LEM-5(35)	1
↓		LEM-4(34)	1
LEM	LDW280-23074	LTA-3(13)	1

PART NO. LDW280-11193-19

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28074	LEM-2(32)	1
LEM	LDW280-28074	LEM-1(3	
LEM	LDW280-28074	LTA-8(18)	1

PART NO. LDW280-11193-17 | GAEC SCH NO. 31-4

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53114	LEM-6(36)	1
↑	↑	LEM-5(35)	1
		LEM-4(34)	1
	LDW280-53114	LEM-3(33)	1
	LDW280-23114	LTA-3(13)	1
	LDW280-28114	LEM-2(32)	1
↓	LDW280-28114	LEM-1(31)	1
LEM	LDW280-28114	LTA-8(18)	1

PART NO. LDW280-11193-15 | GAEC SCH NO. 31-2

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28051	[illegible]	1
LEM	LDW280-28051	LEM-1(31)	1
LEM	LDW28[illegible]	[illegible]	1
PART NO.	LDW280-11193	-3	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-54051	LEM-1[illegible](45)	2
↑	LDW280-54051	[illegible]	[illegible]
	LDW280-54051	LEM-13(43)	2
	LDW280-54051	LEM-12(42)	2
	LDW280-54051	LEM-11(41)	2
	LDW280-54051	LEM-[illegible](40)	2
	LDW280-540[illegible]	LEM-9(3[illegible])	2
	LDW280-540[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	2
	LDW280-54051	[illegible](34)	2
	[illegible]	[illegible]	[illegible]
	LDW[illegible]	[illegible] 4(3[illegible])	2
	LDW280-53051	[illegible]	2
	LDW280-28051	LEM-2(32)	2
↓	LDW280-28051	LEM-1(31)	2
LEM	LDW280-28051	LTA-8(18)	2

PART NO. LDW280-11193-1 | GAEC SCH NO. 21-3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	3.00					
REV	C	C	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -19

GRUMMAN REL INFO B/C

PRIM NO. 207 | JK(001) mP 7-?-6B

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM #1 | DOCUMENTATION TYPE II

DRAWN BY	OCONNELL 6-8-66	RELIABILITY	
LAYOUT BY	DeMarco 7-19-66		
CHECKED BY	F 7-16-66		
GROUP LDR	J Pusateri 7-19-66		
VEH.DES.INT	[illegible] 7/[illegible]		
STRUCTURES	[illegible]	PROJ ENGR	A m. Carbee (EV) 8/2
STRUCTURES	Hilderman 7/26	REL GROUP	Port 8-5-65
WEIGHTS	[illegible]		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT ASSY.
ASCENT CABIN - ELECTRICAL +Z64.557

SIZE B | CODE IDENT NO. 26512 | LDW280-11193 C

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00,1.10, 2.00,3.00						EO A1	EO A1 INITIAL DRAWING RELEASE PARTS MADE PER EO	NOTED	NOT	REQ'D.	E. O'CONNELL 7-8-66		
	2							EO A2	ADDED -3 ASSY : -13 , NAS697A08 (4) & MS20426AD3						
B	1							EO B1	ADDED -15						
	2							EO B2	ADDED -17						
	3							EO B3	-23 REPLACES -13			-13			
	4							EO B4	FOR LDW280-11193-15 ADDED EFFECTIVITIES FOR LTA-3(13), LEM-3(33), LEM-4 (34), LEM-5(35), LEM-6(36) 1 EA. REQ'D. PER VEHICLE		NOT	REQD.			
	5							EO B5	ADDED -19						
C	1	1,1.10					/	EO C1	IN MODEL BLOCK FOR -15 ADDED LTA-3 EFFECTIVITY (NOT APPLICABLE PREVIOUSLY INC ON EO B4)	LTA-3(13)	NOT	REQD	T. FREDA 8-24-66		
	2							EO C2	ON LDW280-11193-1 ASSY ADD EFFECTIVITY LEM-3(33) THRU LEM-15(45)	LEM-3 THRU -15					

FOR CONTINUATION OF REVISIONS SEE SHEET

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW280-11193	C
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER EMF-A

DWG. NO. LDW 280-11193 | EO NO. D1
CONTROL INFO NO. LDW 280A-4218

REVISE NEXT ASSEMBLY OF -15 AS FOLLOWS:

FOR LM-4(34) THRU LM-6(36) NEXT ASSY LDW 280-23114

WAS LDW 280-53114

EXTEND EFFECTIVITY OF -15 TO INCLUDE LM-7(37) THRU LM-15(45)
NEXT ASSY AND QUANTITY SAME AS FOR LM-6 (36)

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		3

REASON FOR EO: TO CORRECT NEXT ASSEMBLY

DESCRIPTION OF EO: FOR -15: ADDED LM-7(37) THRU LM-15(45) EFFECTIVITIES. NEXT ASSY WAS LDW 280-53114 FOR LM-4(34) THRU LM-6 (36) EFFECTIVITY.

Ⓡ GAEC C EO RELEASE FR 12/1?/6

MODEL	EFFECTIVITY		
	~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	~~SUB CONTR UNIT~~ NO.
LM	LM-4 (34)	THRU LM-15	(45)

DRAWING CHANGE REQD		DISPOSITION OF PARTS										
✓		NOT REQ'D		APPROVED BY								
				DATE	12/9						12-14-66	12/14/66
REVISE DWG	RECORD EO	REWORK	SCRAP	6	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SUPPORT ASSY - ASCENT, CABIN, ELECTRICAL, +764.557	LDW 280-11193	D1

ISSUED BY Geo. W. Rocklein x1441 12/9/66

SECTION Veh. Des. Int.

GROUP NO. 335 PL 35

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER EMF-A

DWG. NO.	LDW280-11193	EO NO.	D2
CONTROL INFO NO.	LDW280A504-1		

ON SHT #1 FOR -19:

EXTEND EFF TO LM-7 (37) THROUGH LM-15 (45)

N/A & QUANTITY IDENTICAL TO LM-6 (36)

3

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☐

REASON FOR EO

TO EXTEND EFF OF -19 TO LM-7 THRU LM-15.

DESCRIPTION OF EO

FOR -19 ADDED LM-7 THROUGH LM-15

GAEC EO RELEASE: FR 1/24/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LM-7 (37) THROUGH LM-15 (45)		

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		NOT REQD	

APPROVED BY									
DATE	1/20/67			1-19-67				1-23-67	1-24-67
6	V.D1	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG		PROJ ENGRG	GOVT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	[illegible] +28 [illegible]	LDW280-11193	D2

ISSUED BY J. [illegible] X1152 1/24

SECTION VIII

GROUP NO. 225

PL 35

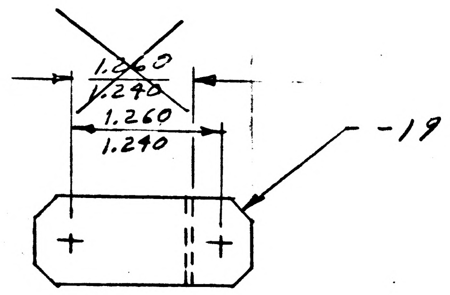
01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11193	EO NO. D3
CONTROL INFO NO. LM5-21767	



ON -19 DETAIL CORRECT DIMENSION CALLOUT TO AGREE WITH THE PICTURE AS NOTED

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☒	CL I ENGRG CHG	☐

REASON FOR EO
CLERICAL ERROR, PART COULD NOT BE MADE AS DIMENSIONED; PICTURE IS CORRECT

DESCRIPTION OF EO
CORRECTED LOCATION OF ARROW HEAD FOR 1.260-1.240 DIM. TO AGREE WITH PICTURE.

GAEC EO RELEASE (5)
VK SB 5-21-69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM.		NOT REQD	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		NOT REQD	

APPROVED BY	JPS			[illegible]	RH	CR	JaP	[illegible]
DATE	5/21/69			5/1/69	5.5.69	5.5.69	5/21/69	5/16/69
5/5/69	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONF~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
E	SUPPORT ASSY ASCENT CABIN ELECTRICAL +Z64.557	LDW280-11193	D3

ISSUED BY LIAISON J. PAULSEN SECTION VDI. GROUP NO. 335 PL 25

01
NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28159	LEM-2(32)	1
LEM	LDW280-28159	LEM-1(31)	1
LEM	LDW280-28159	LTA-8(18)	1

PART NO. LDW280-11194-11

GAEC SCH NO. 30-

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH				
SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -11

GRUMMAN REL INFO

PRIM NO. 215 (LE001) MP-A 8-17-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY	A.PFORTSCH 5/10/66
LAYOUT BY	A.PFORTSCH 5/10/66
CHECKED BY	
GR LDR	P.HENTON 5/10
VEH DES INT	W.BISCHOFF 5/12
STRUCTURES	F.BUNCE
STRUCTURES	HILDERMAN 5/16
WEIGHTS	ROBESCH 5/12

PROJ ENGR J.ALBER-R.CARBEE 5/19

REL GROUP BOTTI 5/21/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TEE
ASCENT STAGE-MID SECT-LOWER
THERMAL SHIELD LH - Z20, -Y61

SIZE B CODE IDENT NO. 26512 LDW280-11194 A

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 9-64

SUPERSEDES LDW280-11194 NO CHG

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
RETRACED NO CHG - LAST REV. NC - ADDED SH 1.10 - SH 1.00 OF 4 WAS SH 1.00 OF 3										L. BRIDA 8-8-66					
A	1	3.00						EO A1	CORRECTED VIEW OF -11	NOT REQD	NOT REQD		L. BRIDA 8-8-66		
	2	1.00, 1.10		DCRF 323-1078					EFF. FOR -11 WAS LTA-8, LEM-1 THRU LEM-6	NOTED		-11			
	3	3.00							ADDED DIM 36°		-11				

CHG APPROVED	LTR	GROUP LDR	VEH DSGN INT	STRUCTURES	STRUCTURES	WEIGHTS
	A					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11194	A
SCALE NONE		SHEET 1.10	

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11194-11	E	TEE	AL ALLOY EXTR	QQ-A-200/11	7075-T6	DIE#33481 X 9 LG	SEE NOTE 1	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP 14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-11194
A
SCALE NONE
SHEET 200

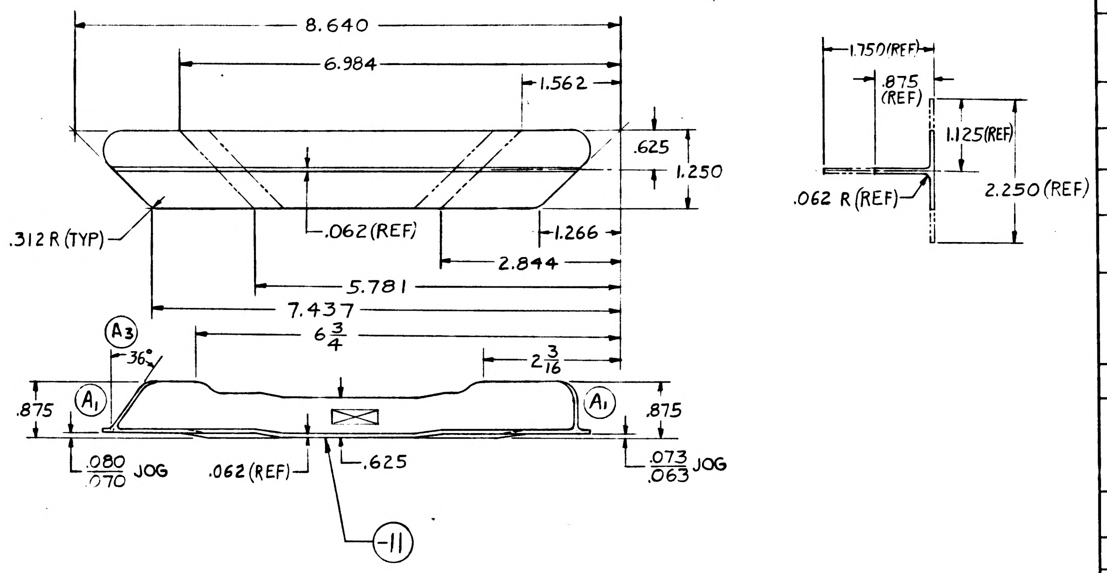
ENG 77.2 7-65

01

NAS 9-1100

NOTES:

1. FORM PER LSP 14-5300.
2. NO TOOLING HOLES PERMITTED IN PARTS.


8.640
6.984
1.562
.625
1.250
.062 (REF)
.312 R (TYP)
1.266
2.844
5.781
7.437
$6\frac{3}{4}$
$2\frac{3}{16}$
A3
36°
A1
A1
.875
.875
.080/.070 JOG
.062 (REF)
.625
.073/.063 JOG
-11
1.750 (REF)
.875 (REF)
1.125 (REF)
2.250 (REF)
.062 R (REF)

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL f DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE C	CODE IDENT NO. 26512	LDW280-11194	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

LDW280-11194 A

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO
EO NO.
CONTROL INFO NO.

DWG. NO.	DASH NO. *	TITLE	CHANGE NO	NEXT ASSEMBLY (SEE NOTE)	REQUIREMENTS	NUMBER REQD.
LDW280-10653 ✓	-15	SEE DWG.	B1	LDW280-28159	ADD QUAL TEST TO EFF.	1
LDW280-10898 ✓	-15		B1			
	-17					
LDW280-10985 ✓	-15		B1			
	-17					
LDW280-10988 ✓	-15		B2			
	-17					
LDW280-10987 ✓	-11		B2			
	-13					
	-15					
	-17					
	-19					
LDW280-10989 ✓	-15		B1			
	-17					
LDW280-10990 ✓	-15		C1			
	-17					
	-23					
	-25					
LDW280-1[illegible]1 ✓	-17		C3			
	-23					
	-25					
	-27					
	-29					
	-30					
LDW280-10992 ✓	-13		C2			
	-15					
	-17					
	-21					
LDW280-10993 ✓	-15		C1			
	-17					
	-19					
	-21					
	-23					
LDW280-10994 ✓	-16		B3			
	-17					
LDW280-10995 ✓	-17		B1			
LDW280-10996 ✓	-13		B1			
LDW280-10997 ✓	-11		B1			
LDW280-11000 ✓	-15 -19 -21		B1			
LDW280-11001 ✓			B1			
	-13					1
LDW280-11002 ✓	-11		B1			~~5~~
	-13					5
	-15					5
LDW280-11003 ✓	-17		B1			6
	-19					6
	-21					6
	-23					
LDW280-11007 ✓	-11		B1			1
	-13					
LDW280-11012 ✓	-11		C1			
	-15					
	-17					
	-19	SEE DWG.		LDW280-28159	ADD QUAL. TEST TO EFF.	

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO | DESCRIPTION OF EO | GAEC EO RELEASE

MODEL | EFFECTIVITY: PROCURING ACTIVITY NO. | GAEC UNIT NO | SUB CONTR UNIT NO | DRAWING CHANGE REQD: REVISE DWG, RECORD EO | DISPOSITION OF PARTS: REWORK, SCRAP | APPROVED BY | DATE | SUPPORT | RELIAB GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG | GOVT | PRIORITY | DRAWING TITLE | DRAWING NO. | EO NO.

ISSUED BY______ SECTION______ GROUP NO. ______

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

EO NO LEO280
EO NO. 327
CONTROL INFO NO. LDW280A0538

DWG. NO.	DASH NO. *	TITLE	CHANGE NO.	NEXT ASSEMBLY	REQUIREMENTS	NUMBER REQD.
LDW280-11194 ✓	-11	SEE DWG.	B2	LDW280-28159	ADD QUAL. TEST TO EFF.	1
LDW280-11331	-11		A1	LDW280-28378		1
	-13			-28378		1
LDW280-28378	-1		A1	LDW280-28159		1
LDW280M10604	-1		B4	-28159		2
	-2			-28162		2
LDW280M10605	-1		B2	-28159		1
LDW280M10606	-3-1		B3	-28159		
LDW280M10609	-5		B3	-28159		
LDW280M10610	-5		C4	-28159		
LDW280M10869	-3		B4	LDW280-28159		
	-4			-28159		
LDW280M10902	-1		A1	-28150		
LDW280M10905	-1		A2	-28159		
LDW280M10952	-3		B1	-28159		
LDW280M10955	-1		A1			
LDW280M10956	-1		A1			
LDW280M10969	-1		B2			
LDW280M10977	-1		A2	-28159		
LDW280M1[illegible]	-1		B2	-28153		
LDW280M10975	-1		A2	-28153 -51153		
LDW280-11004	-11		B1	-28159		4
	-13					4
	-15					4
LDW280-11006	-15		B1			1
	-13	SEE DWG.		LDW280-28159	ADD QUAL TEST TO EFF.	1
	-17					1
	-19					1
	-21					1
	-23					1

FOR THE PRECEEDING DRAWINGS: ADD QUALIFICATION TEST EFFECTIVITY FOR DASH NO.'S * NOTED.

DETAIL SPEC REQ | CL II ENGRG CHG | ✓ CL I ENGRG CHG

REASON FOR EO: TO ADD QUALIFICATION TEST

DESCRIPTION OF EO: FOR -* ADDED QUALIFICATION TEST EFFECTIVITY

GAEC EO RELEASE: 10/24

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO	SUB CONTR UNIT NO	DRAWING CHANGE REQD	DISPOSITION OF PARTS	APPROVED BY	DATE
LM		NOTED		REVISE DWG ✓	NOT REQD		10-10-66

PRIORITY: C
DRAWING TITLE: SEE DWG.
DRAWING NO: LEO280
EO NO.: 327

ISSUED BY X7035 SECTION VEH. DES. INT. GROUP NO. 335 PL 35 EMA

01

NAS 9-1100

LDW280-11195 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23487	LM-2 (32)	1 EA.
LM	LDW280-23487	LM-1 (31)	1 EA.
LM	LDW280-23487	LTA 3(18)	1 EA.
PART NO. LDW280-11195-13 & -17		GAEC SCH NO. 32	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	3.00					
REV	B	B	B	B					
SHEET									
REV									
SHEET									
REV									

		GRUMMAN REL INFO B		
LAST SECT LTR USED	A	PRIM NO.	LE(001)	
LAST DASH NO. USED	-17	215	MP-14	8-11-2016

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.010 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	VALENTINE 5-11		
LAYOUT BY	VALENTINE 5-11		
CHECKED BY			
GR.LEADER	PHILLIPS 5-11		
VEH.DES.INT.	BISCHOFF 5-11		
STRUCTURE	HILDERMAN 5-11	PROJ ENGR	J. ALBEE 5-16
STRUCTURE	F.E.B. 5-16	REL GROUP	G. BOTTI 5-21
WEIGHTS	ROBESCH 5-16		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET
ASCENT STAGE~MID-SECTION
MISSION PROGRAMER CONN. SUPPORT

SIZE	CODE IDENT NO.		
B	26512	LDW280-11195	B
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

SUPERSEDES LDW280-11195 NO CHG 5-21-66

01 NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
											REWORK	SCRAP			
									RETRACED NO CHANGE LAST REV. NO CHANGE ADDED 1.10, 2.00 & 3.00. M. GIERAK 10·21·66						
A	1	1.00, 1.10 & 3.00						EOA1	ADDED 2 3/4 DIMENSION AND CORRECTED VIEW OF -13	LTA-8, LM-1 & LM-2	✓		M. GIERAK 11·3·66		
	2	1.00, 1.10 & 3.00					✓	EOA2	ON -11 .127-.133 DIA. HOLE (16) WAS .119-.124 DIA. HOLE (16) ANGLE 75° WAS 85°.	LTA-8, LM-1 & LM-2	✓				
	3	1.00, 1.10, 2.00 & 3.00						EOA3	ADDED CUTOUT TO -11 & ADDED -15	LTA-8, LM-1 & LM-2	✓				
	4	1.10, 1.10, 2.00 & 3.00						EOA4	REF. E.O.A3 ON -15 REVISED DIM. 3 3/8 WAS 2 3/8, 3 17/32 WAS 2 17/32, 2 1/2 WAS 1 1/2.	LTA-8, LM-1 & LM-2, LM3	✓				
B	1	1.00 1.10 2.00 & 3.00						EOB1	IN F/D & B/M: REMOVED -11 & -15. ADDED -17	LTA-8, LM-1 LM-2		-11 & -15			
	2	1.10						A&B Ⓑ	REF. EOA3 DWG. CORRECTION IN M/B REMOVED LM-3	LTA-8, LM-1 LM-2	NOT	REQD		R.W.G. 11-18-66	11/19/66

CHG APPROVED

LTR	GROUP LDR	VEH. DES. INT.	STRUCTURE	STRUCTURE	WEIGHTS					
A										
B	—	[illegible]	[illegible]							

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11195	B
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

								LDW280-11195-17	E	BRACKET	AL. ALLOY SH.	QQ-A-250/4	2024-T3	.040 × 6 × 8	NONE	88	
								LDW280-11195-13	E	GUSSET	AL. ALLOY SH.	QQ-A-250/4	2024-T3	.040 × 3 × 4	NONE	88	
QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11195	B

SCALE NONE

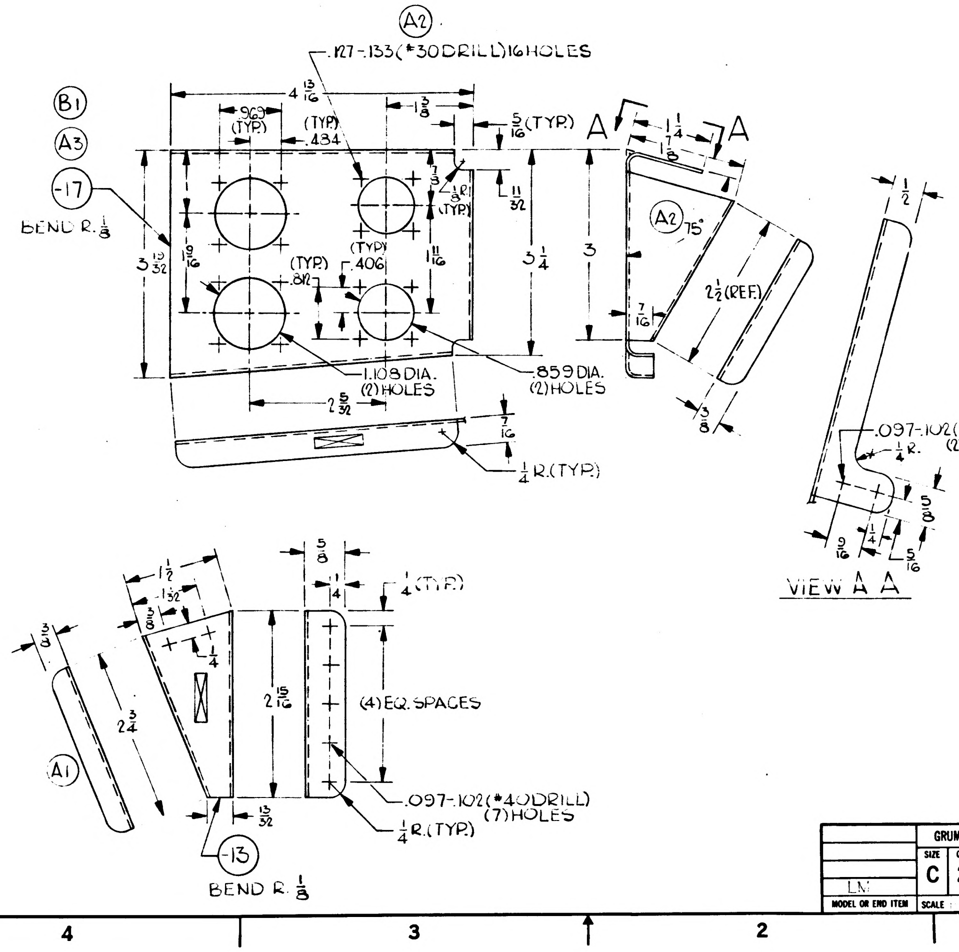
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTE:
NO TOOLING HOLES PERMITTED IN PARTS.


A2
.127-.133(#30DRILL)16HOLES
B1
A3
-17
BEND R. 1/8
4 13/16
.969 (TYP.)
(TYP.) .484
1 3/8
5/16 (TYP.)
A
A
1 1/4
1 7/8
7/8
1/8 R. (TYP.)
11/32
3 19/32
1 9/16
(TYP.) .812
(TYP.) .406
1 11/16
3 1/4
3
1.108 DIA. (2) HOLES
.859 DIA. (2) HOLES
2 5/32
7/16
1/4 R. (TYP.)
A2
75°
2 1/2 (REF.)
7/16
3/8
1/2
.097-.102(#40DRILL) (2)HOLES
1/4 R.
5/8
9/16
1/4
5/16
VIEW A A
1 1/2
1 1/32
3/8
3/8
1/4
2 3/4
A1
2 15/16
5/8
1/4
1/4 (TYP.)
(4) EQ. SPACES
.097-.102(#40DRILL) (7)HOLES
1/4 R. (TYP.)
13/32
-13
BEND R. 1/8

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

[illegible] PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	C	26512	LDW280-11195	6

SCALE
SHEET

ENG 73-8 11-64

01
NAS 9-1100

C

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11195
EO NO. C1
CONTROL INFO NO. LM-5-11848

TO -13 & -17 MODEL BLOCK, ADD:
MODEL: LM
NEXT ASSY.: LDW280-28487
MODULE: LM-3(33)
REQD./MODULE: 1 EA.

RELEASED BY LIAISON

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: TO PROVIDE STOWAGE FOR UNOSED LMP WIRE HARNESSES

DESCRIPTION OF EO: TO -13 & -17 MODEL BLOCK, ADDED LM-3 REQUIREMENTS

GAEC EO RELEASE: JK 3

EFFECTIVITY

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3(33)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: NOT REQD. (REWORK / SCRAP)

APPROVED BY	WT			~			RME	
DATE	2/6/67			~	2-18-67	2-17	2-21-67	2-18-67
b	VD1	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C

DRAWING TITLE: BRACKET A/S M/S MISSION PROGRAMMER CONN. SUPPORT

DRAWING NO.: LDW280-11195

EO NO.: C1

ISSUED BY F. STEINMETZ X6510 SECTION VD1 GROUP NO. 335 PL 5

01

NAS 9-1100

QTY PER ASSEMBLY -5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
2	8	3		NAS697A08	E	PLATE NUT	STD PART						
				NAS1097AD3	E	RIVET	STD PART						
				MS20426AD3	E	RIVET	STD PART						
				LDW280-11196-22	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040×1 5/8×2 5/8	NONE	88	
				LDW280-11196-21	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040×1 5/8×2 3/8	NONE	88	
1				LDW280-11196-19	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.032×3 7/8×3 7/8	NONE	88	
				LDW280-11196-17	↑	↑	↑	↑	↑	.032×2 7/8×4 1/4	↑	↑	
				LDW280-11196-16						.040×1 5/8×2 3/8			
				LDW280-11196-15						.040×1 5/8×2 3/8			
	1			LDW280-11196-13	↓	↓	↓	↓	↓	.040×4×8 5/8	↓	↓	
		1		LDW280-11196-11	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040×3 1/8×3 3/4	NONE	88	
				LDW280-11196-5	E	SUPPORT ASSY					NONE	NONE	
				LDW280-11196-3	E	SUPPORT ASSY					NONE	NONE	
				LDW280-11196-1	E	SUPPORT ASSY					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-11196
A
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

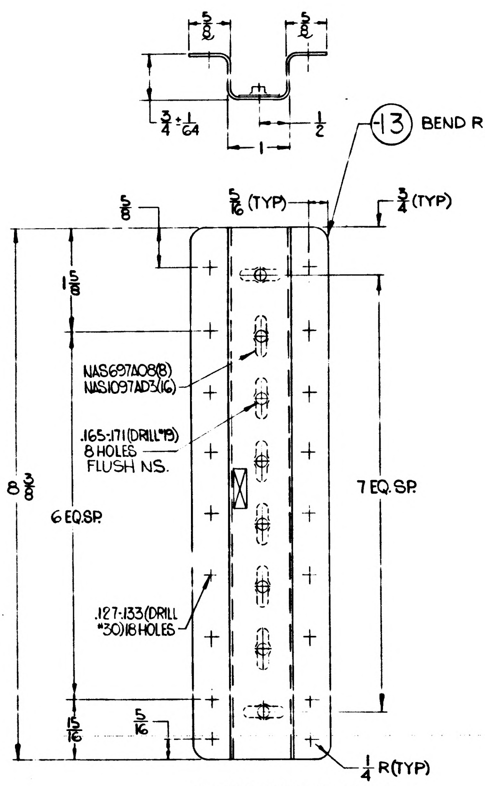
01

NAS 9-1100

LDW280-11196 A

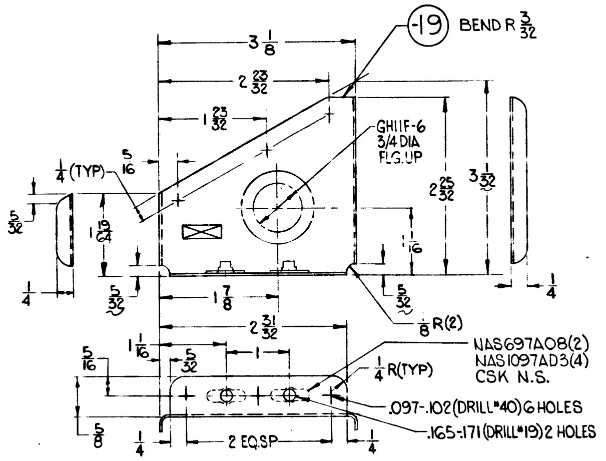
NOTE:

1. NO TOOLING HOLES PERMITTED IN PARTS.



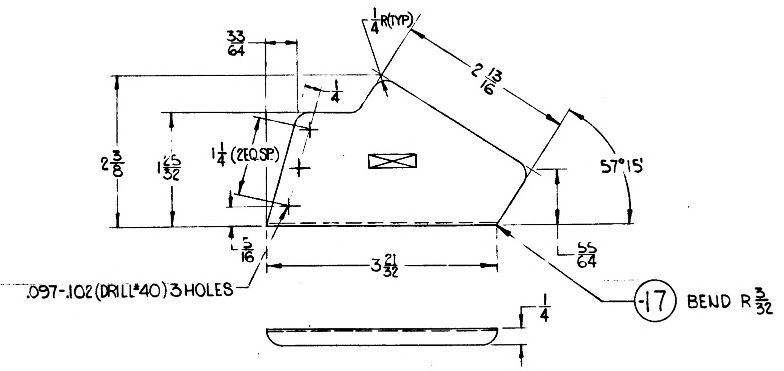
5/8
5/8
3/4 ± 1/64
1
1/2
-13 BEND R 1/8
5/8
5/16 (TYP)
3/4 (TYP)
1 5/8
NAS697A08(8)
NAS1097AD3(16)
.165-.171 (DRILL #19) 8 HOLES FLUSH NS.
8 3/8
6 EQ.SP.
7 EQ.SP.
.127-.133 (DRILL #30) 18 HOLES
15/16
5/16
1/4 R(TYP)

LDW280-11196-3 ASSY

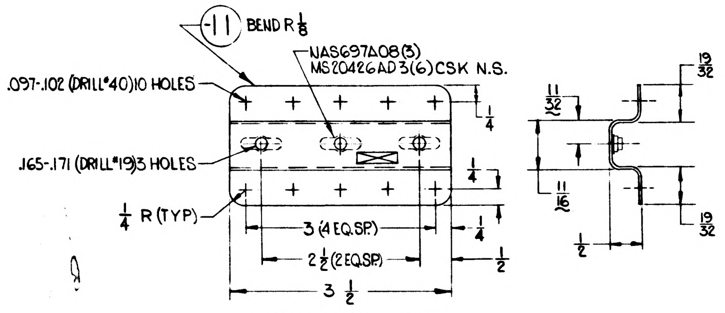


-19 BEND R 3/32
3 1/8
2 23/32
1 23/32
GH11F-6 3/4 DIA FLG.UP
1/4 (TYP)
5/16
5/32
1 19/64
2 25/32
3 3/32
1 1/16
1/4
5/32
1 7/8
5/32
1/8 R(2)
1/4
2 31/32
1 1/16
1
5/16
5/32
NAS697A08(2)
NAS1097AD3(4)
CSK N.S.
1/4 R(TYP)
.097-.102 (DRILL #40) 6 HOLES
.165-.171 (DRILL #19) 2 HOLES
5/8
1/4
2 EQ.SP.
1/4

LDW280-11196-5 ASSY

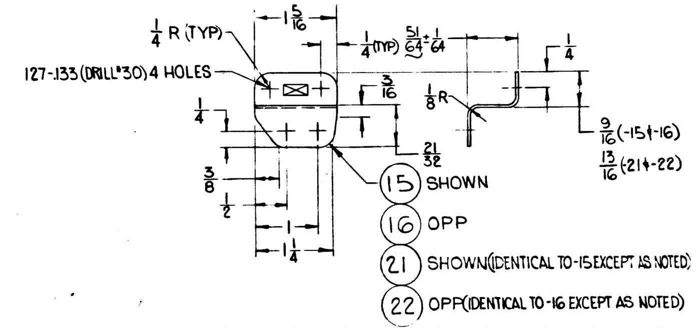


1/4 R(TYP)
33/64
2 13/16
1/4
1 1/4 (2EQ.SP.)
2 3/8
1 15/32
57°15'
1/16
3 21/32
55/64
.097-.102 (DRILL #40) 3 HOLES
-17 BEND R 3/32
1/4



-11 BEND R 1/8
NAS697A08(3)
MS20426AD3(6) CSK N.S.
.097-.102 (DRILL #40) 10 HOLES
.165-.171 (DRILL #19) 3 HOLES
1/4 R (TYP)
1/4
1/4
1/2
3 (4 EQ.SP.)
2 1/2 (2 EQ.SP.)
3 1/2
11/32
19/32
11/16
1/2
19/32

LDW280-11196-1 ASSY



1/4 R (TYP)
1 5/16
.127-.133 (DRILL #30) 4 HOLES
1/4 (TYP)
51/64 ± 1/64
1/4
3/16
1/8 R
1/4
21/32
9/16 (-15 & -16)
13/16 (-21 & -22)
3/8
1/2
1
1 1/4
15 SHOWN
16 OPP
21 SHOWN (IDENTICAL TO -15 EXCEPT AS NOTED)
22 OPP (IDENTICAL TO -16 EXCEPT AS NOTED)

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
	SIZE D	CODE IDENT NO. 26512	LDW280-11196	A
LEM MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

LDW280-11196 A

01 ^ . 1 NAS 9-1100

LDW280-11196 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-54333	LEM-15(45)	1EA
↕	↕	LEM-14(44)	1EA
		LEM-13(43)	1EA
		LEM-12(42)	1EA
		LEM-11(41)	1EA
		LEM-10(40)	1EA
		LEM-9(39)	1EA
		LEM-8(38)	1EA
		LEM-7(37)	1EA
		LEM-6(36)	1EA
		LEM-5(35)	1EA
	LDW280-54333	LEM-4(34)	1EA
	LDW280-53333	LEM-3(33)	1EA
	LDW280-28333	LEM-2(32)	1EA
	LDW280-28333	LEM-1(31)	1EA
LEM	LDW280-28333	LTA-8(18)	1EA
PART NO. LDW280-11196-5 & 17		GAEC SCH NO. 32-5	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28070	LEM-2(32)	1EA
LEM	LDW280-28070	LEM-1(31)	1EA
LEM	LDW280-28070	LTA 8(18)	1EA
PART NO. LDW280-11196-15; 16; 21 & -22		GAEC SCH NO. 32-5	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53333	LEM-3(33)	2
↕	LDW280-28333	LEM-2(32)	2
	LDW280-28333	LEM-1(31)	2
LEM	LDW280-28333	LTA-8(18)	2
LDW280-11196-3			
LEM	LDW280-54333	LEM-15(45)	2
↕	↕	LEM-14(44)	2
		LEM-13(43)	2
		LEM-12(42)	2
		LEM-11(41)	2
		LEM-10(40)	2
		LEM-9(39)	2
		LEM-8(38)	2
		LEM-7(37)	2
		LEM-6(36)	2
		LEM-5(35)	2
	LDW280-54333	LEM-4(34)	2
	LDW280-53333	LEM-3(33)	2
	LDW280-28333	LEM-2(32)	2
	LDW280-28333	LEM-1(31)	2
LEM	LDW280-28333	LTA-8(18)	2
PART NO. LDW280-11196-1		GAEC SCH NO. 32-5	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	B	B	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED —
LAST DASH NO. USED -22
GRUMMAN REL INFO B
PRIM NO. 215
4E(001) MP-6 B-1-11-7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS-9-1100
LINE ITEM #1
DOCUMENTATION TYPE II
DRAWN BY R.SVOBODA
LAYOUT BY R.D. MARCO
CHECKED BY WCG 7/12/66
GR.LEADER TRAUT 8/22/66
VEH.DES.INT.
STRUCTURES 8/2
STRUCTURES 8/27
WEIGHTS
RELIABILITY
PROJ ENGR 8/30
REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT ASSY
ASCENT STAGE ~ MID SECTION
-Z 27 BHD ~ ELECT

SIZE B
CODE IDENT NO. 26512
LDW280-11196 B
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00						EO A1	SUPERSEDED BY EO A6	NOT REQD	NOT	REQ'D	SVOBODA 6-30-66		
	2	1.10						EO A2	SUPERSEDED BY EO A4	NOT REQD	NOT	REQ'D			
	3	2.00						EO A3	SUPERSEDED BY EO A5	NOT REQD	NOT	REQ'D			
	4	3.00						EO A4	SUPERSEDED BY EO A7	NOT REQD	NOT	REQ'D			
	5							EO A5	SUPERSEDES EO A3; ADDED -5 ASSY: -19, NAS697A08(2) & NAS1097AD3(4). ADDED -17.	LTA-8 LEM-1 & -2	NOT	REQ'D			
	6							EO A6	SUPERSEDES EO A1; EO A1 INITIAL DRAWING RELEASE PARTS MADE PER E.O.						
	7							EO A7	SUPERSEDES EO A4 ADDED -3 ASSY, LDW280-11196-13, NAS 697A08(8) & NAS1097AD3(16). ALSO ADDED LDW280-11196 -15,-16,-21 & -22. EJR				WCG		
B	1	1.00 & 1.10						EO-B1	TO LDW280-11196-1,-5 -17 ADDED EFFECTIVITY LEM 3 (33)	LEM-3 (33)	NOT	REQ D	Castellano 12-27-66		
	2	1.00 & 1.10						LEO280-244	ADDED LEM-4 (34) THRU LEM 15 (45) EFFECTIVITY FOR -1, -5 & -17	NOTED	NOT	REQ'D			

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY					
A			8/22								
B											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11196	B

SCALE NONE

SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280	EO NO. 1315
CONTROL INFO NO. LDW280B6820	

TO THE FOLLOWING DRAWINGS LISTED BELOW & THEIR *DASH NUMBERS
RESTRICT TO LM4(34) THRU LM14(44) WAS LM 4(34) THRU LM15(45)

DWG #	TITLE	*DASH #	QUANTITY	N/A	EO#
LDW280-10901	DOUBLER A/S-M/S -227 EQUIP LINES	-13	2	LDW280-54333	B3
LDW280-11196	BRACKET A/S-M/S -227 EQUIP LINES	-1 -5 & -17	2 1EA		C1
LDW280-11378	BRACKET A/S-M/S -227 EQUIP LINES.	-11,-13,-16, -17, & -19 -15	1EA 2		B1
LDW280-11379	BRACKET A/S-M/S -227 EQUIP LINES	-11,-13,-15, -17 & -18	1EA		B1
LDW280-11380	CLIP A/S-M/S -227 EQUIP LINES	-11,-13,-15 -17 & -19	1EA		B1
LDW280-11402	BRACKET A/S-M/S -227 EQUIP LINES	-11,-17,-19 & -1 -13	1EA 2		B3
LDW280-11403	BRACKET A/S-M/S -227 EQUIP LINES	-1,-2, & -17	1 EA		A3
LDW280-11674	BRACKET A/S-M/S -227 EQUIP LINES	-11,-23,-15 -27 & -29	1EA		D1
LDW280-16087	BRACKET ASSY, A/S-M/S -227 EQUIP LINES	-1	2		A2
LDW280-16024	CLIP A/S-M/S -227 EQUIP LINES	-11	1	LDW280-54333	C3

DETAIL SPEC REQ ☐	CL II ENGRG CHG ☐	CL I ENGRG CHG ☑	LCD 3587 PKG # 11 (5)

REASON FOR EO	DESCRIPTION OF EO
ELIMINATION OF CERTAIN EQUIP IN THE LM15 A/S	IN MOD BLK FOR * RESTRICTED TO LM4(34) THRU LM14(44) WAS LM 4(34) THRU LM15(45)

EO RELEASE: 3-24-69; VC 3/26/9

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK | SCRAP ✓

	VDI	SUPPORT	~~RELIAB GROUP~~ MAT'LS	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY				FOR				
DATE	3/6/69			3/6/69	3/19/69		3/20/69	3-26-69

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE ABOVE	LEO 280	1315

4-15-69
ISSUED BY P. WEISSLITL X86048 SECTION VDI GROUP NO. 335 PL 25

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED-NO CHANGE- LAST REV. N.C.- ADDED SH. 1.10, 2.00, & 3.00.-G. KORDES-10/24/66.	LTA-8(18) LM-1(31) LM-2(32)	NOT	REQD	GB JK		

CHG APPROVED	LTR	GROUP LDR	VEH.DES.INT	STRUCTURES	STRUCTURES	WEIGHTS		PROJECT	RELEASE			

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11197

SCALE NONE

SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

		-7	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
							MS20426AD3	E	RIVET	STD PART						
		3	3	2	2		NAS697A08	E	NUT PLATE	STD PART						
		1					LDW280-11197-19	E	CLIP	AL. ALLOY SH	QQ-A-250/4	2024-T3	.040 × 3 × 4	NONE	88	
			1				LDW280-11197-17	E	CLIP	AL. ALLOY SH	QQ-A-250/4	2024-T3	.045 × 2 × 4	NONE	88	
				1			LDW280-11197-15	E	CLIP	AL. ALLOY SH	QQ-A-250/4	2024-T3	.040 × 2 × 3	NONE	88	
					1		LDW280-11197-13	E	CLIP	AL. ALLOY SH	QQ-A-250/4	2024-T3	.040 × 2 × 3	NONE	88	
							LDW280-11197-11	E	GUSSET	AL. ALLOY SH	QQ-A-250/4	2024-T3	.040 × 2 × 3	NONE	88	
							LDW280-11197-7	E	SUPPORT ASSY						NONE	
							LDW280-11197-5	E	SUPPORT ASSY							
							LDW280-11197-3	E	SUPPORT ASSY							
							LDW280-11197-1	E	SUPPORT ASSY					NONE	NONE	

QTY PER ASSEMBLY

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11197

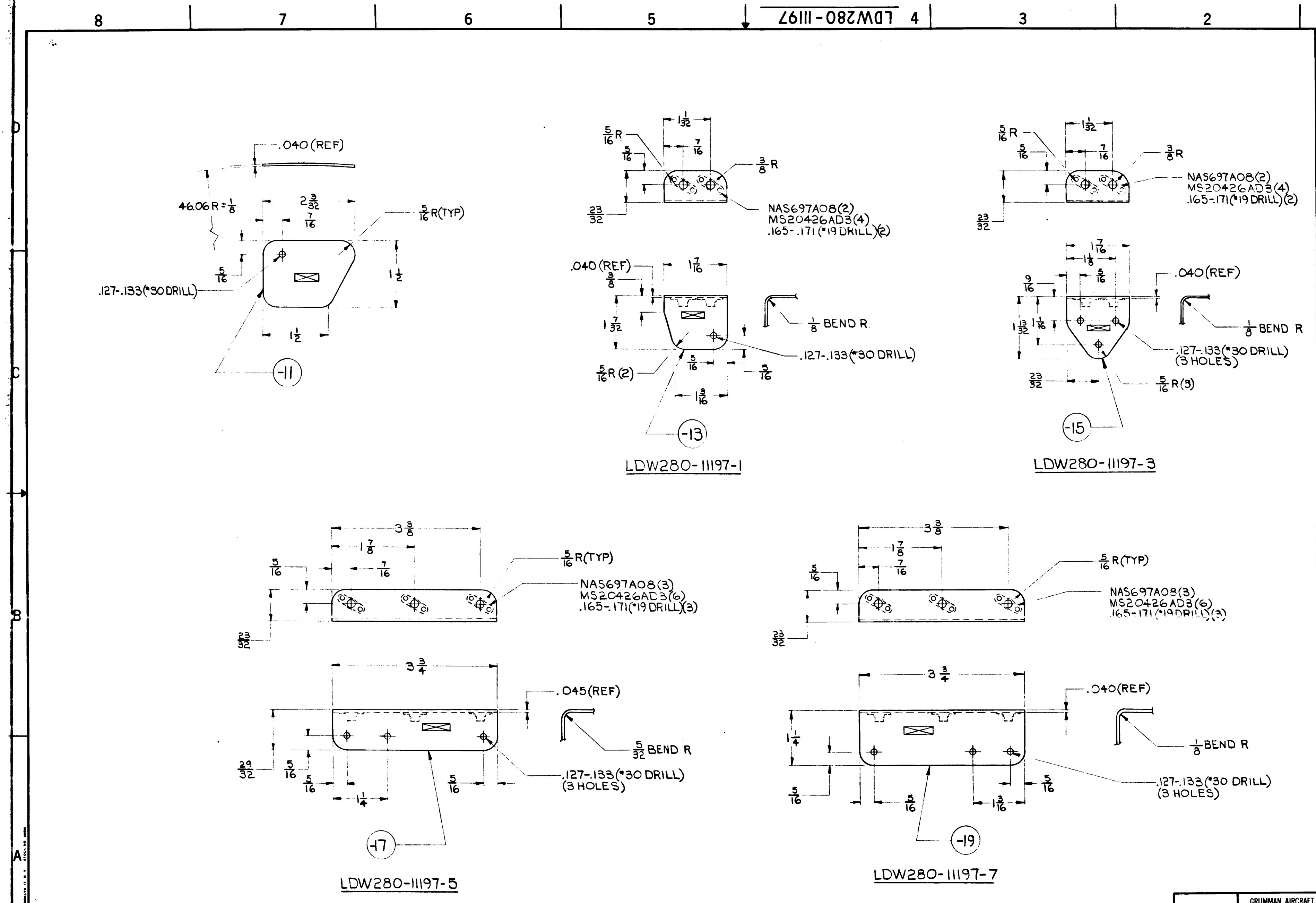
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


.040 (REF)
46.06 R = 1/8
2 3/32
7/16
5/16 R(TYP)
5/16
1 1/2
.127-.133(#30 DRILL)
1 1/2
-11
5/16 R
1 1/32
7/16
5/16
3/8 R
23/32
NAS697A08(2)
MS20426AD3(4)
.165-.171 (#19 DRILL)(2)
.040 (REF)
3/8
1 7/16
1 7/32
1/8 BEND R.
.127-.133(#30 DRILL)
5/16 R (2)
5/16
5/16
1 3/16
-13
LDW280-11197-1
5/16 R
1 1/32
7/16
5/16
3/8 R
23/32
NAS697A08(2)
MS20426AD3(4)
.165-.171(#19 DRILL)(2)
1 7/16
1 1/8
9/16
5/16
.040(REF)
1 13/32
1 1/16
1/8 BEND R
.127-.133(#30 DRILL)
(3 HOLES)
23/32
5/16 R(3)
-15
LDW280-11197-3
3 3/8
1 7/8
5/16
7/16
5/16 R(TYP)
23/32
NAS697A08(3)
MS20426AD3(6)
.165-.171(#19 DRILL)(3)
3 3/4
.045(REF)
5/32 BEND R
29/32
5/16
5/16
1 1/4
5/16
.127-.133(#30 DRILL)
(3 HOLES)
-17
LDW280-11197-5
3 3/8
1 7/8
5/16
7/16
5/16 R(TYP)
23/32
NAS697A08(3)
MS20426AD3(6)
.165-.171(#19 DRILL)(3)
3 3/4
.040(REF)
1 1/4
1/8 BEND R
5/16
5/16
1 3/16
5/16
.127-.133(#30 DRILL)
(3 HOLES)
-19
LDW280-11197-7

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE ~~AVERAGE~~ EDGE DISTANCE MARKED IS 1½ FASTENER DIA	✓
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

LM	SIZE D	CODE IDENT NO. 26512	LDW280-11197
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

LDW280-11197

ENG 73-3 6-64

01 NAS 9-1100

LDW280-11198 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28074	LM-2(32)	4
LM	LDW280-28074	LM-1(31)	4
LM	LDW280-28074	LTA-8(18)	4
PART NO. LDW280-11198-15		GAEC SCH NO. 31-4	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28074	LM-2(32)	2
LM	LDW280-28074	LM-1(31)	2
LM	LDW280-28074	LTA-8(18)	2
PART NO. LDW280-11198-1¢-17		GAEC SCH NO. 31-4	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28074	LM-2(32)	1
LM	LDW280-28074	LM-1(31)	1
LM	LDW280-28074	LTA-8(18)	1
PART NO. LDW280-11198-3		GAEC SCH NO. 31-4	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00			
REV	A	A	A		A			
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED

LAST DASH NO. USED -17

GRUMMAN REL INFO A

PRIM NO.	LE(001)		
215	MP12		GR 5-16

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM I

DOCUMENTATION TYPE II

DRAWN BY	
LAYOUT BY	E. STAHL 5-14
CHECKED BY	
GR. LDR	J. PUSATERI 5-16
VEH. DES. INT	W. BISCHOFF 5-16
STRUCTURES	F.B. B.W 5-17
STRUCTURES	HILDERMAN 5-18
WEIGHTS	D. ROBESCH 5-19
PROJ ENGR	J. ALBER, R.M.C. 5-19
REL GROUP	BOTTI 5-21

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT ASSY
ASCENT STAGE - CABIN EQUIP LINES

SIZE B

CODE IDENT NO. 26512

LDW280-11198 A

SCALE NONE

SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11198 NO CHANGE 5-21-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									RETRACED - NO CHANGE - LAST REV. N.C. - ADDED SH 1.10, 2.00, & 3.00 - G. KORDES - 10/18/66.						
A	1	1.10,3.00	3B					EO A1	ADDED -17 TO MOD/BLK. ON -17 CORRECTED PROJECTED VIEW, $1\frac{5}{32}$ WAS $1\frac{9}{32}$.	LTA-8 LM-1, LM-2	✓		KORDES 10/18/66		

CHG APPROVED										
LTR	GROUP LDR	VEH.DES.I NT	STRUCTURES	STRUCTURES	WEIGHTS		PROJECT	RELEASE		
A										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11198	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY -3	QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
4	8		MS20426AD3	E	RIVET		STD. PART					
2	4		NAS697A08	E	NUT PLATE		STD. PART					
			LDW280-11198-17	E	TEE	7075-T6511			DIE*159V10010×1½LG	NONE	88	
			LDW280-11198-15	E	STRAP	AL. ALLOY SH.	QQ-A-250/4	2024-T3	.040×1¾×2⅜	NONE	88	
1			LDW280-11198-13	E	CLIP	AL. ALLOY SH.	QQ-A-250/4	2024-T3	.045×1¾×1¾	NONE	88	
	1		LDW280-11198-11	E	CLIP	AL. ALLOY SH.	QQ-A-250/4	2024-T3	.040× 2 ×5¼	NONE	88	
			LDW280-11198-3	E	SUPPORT ASSY					NONE	NONE	
			LDW280-11198-1	E	SUPPORT ASSY					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

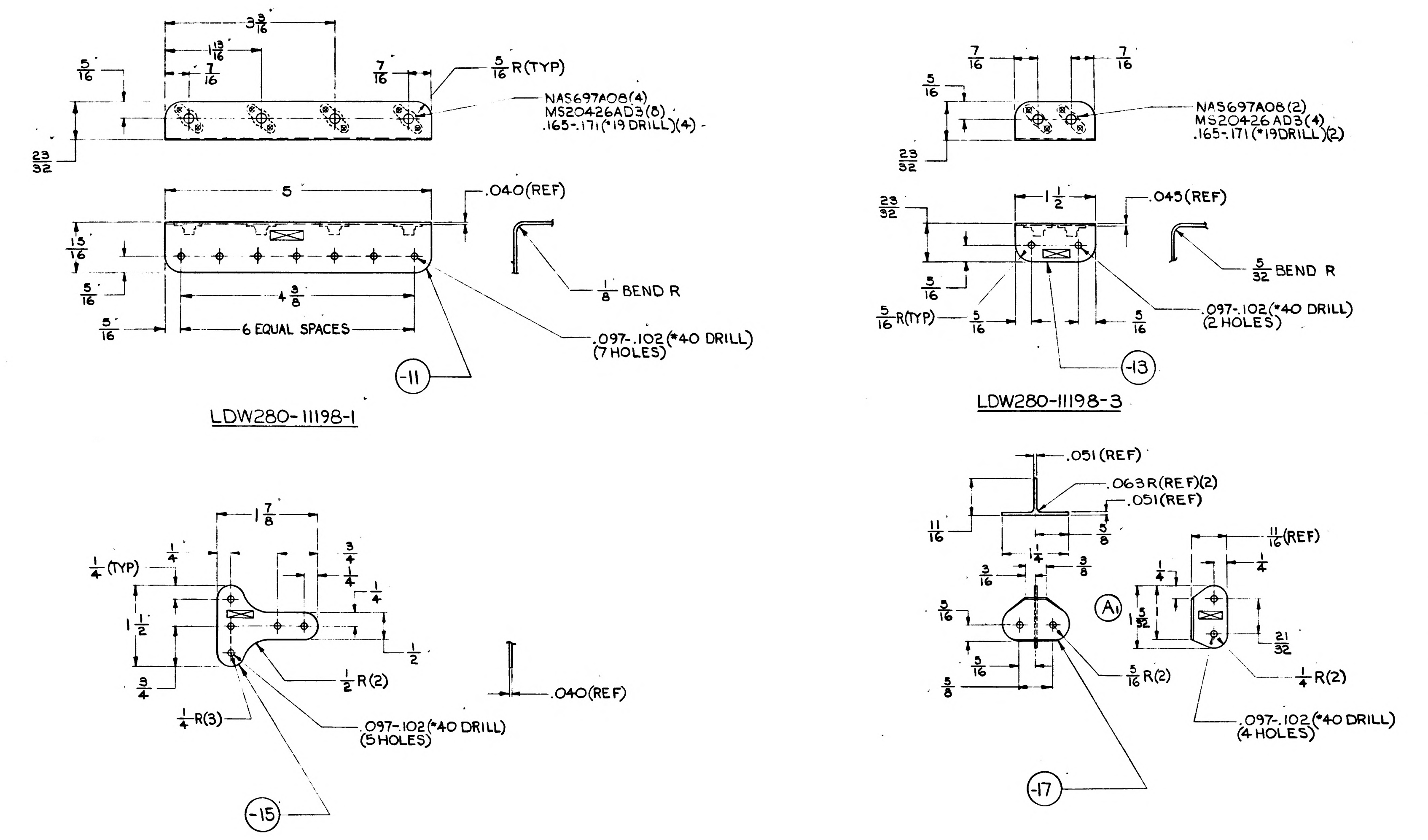
SIZE	CODE IDENT NO.		
B	26512	LDW280-11198	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


3 3/16
1 13/16
7/16
5/16
7/16
5/16 R(TYP)
NAS697A08(4)
MS20426AD3(8)
.165-.171(*19 DRILL)(4)
23/32
5
.040(REF)
15/16
5/16
4 3/8
5/16
6 EQUAL SPACES
1/8 BEND R
.097-.102(*40 DRILL)
(7 HOLES)
-11
LDW280-11198-1
7/16
7/16
5/16
NAS697A08(2)
MS20426AD3(4)
.165-.171(*19DRILL)(2)
23/32
23/32
1 1/2
.045(REF)
5/32 BEND R
5/16
5/16 R(TYP)
5/16
5/16
.097-.102(*40 DRILL)
(2 HOLES)
-13
LDW280-11198-3
1 7/8
1/4 (TYP)
1/4
3/4
1/4
1/4
1 1/2
1/2 R(2)
1/2
3/4
1/4 R(3)
.040(REF)
.097-.102(*40 DRILL)
(5 HOLES)
-15
.051 (REF)
.063R(REF)(2)
.051(REF)
11/16
5/8
1 1/4
3/16
3/8
5/16
A1
11/16(REF)
1/4
1/4
1 5/32
21/32
5/16
5/16 R(2)
5/8
1/4 R(2)
.097-.102(*40 DRILL)
(4 HOLES)
-17

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200√ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE ~~AVERAGE~~ EDGE DISTANCE MARKED IS 1½ FASTENER DIA	✓
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	D	26512	LDW280-11198	A
SCALE FULL			SHEET 3.00	

LDW280-11199 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28074	LM-2(32)	1
LM	LDW280-28074	LM-1(31)	1
LM	LDW280-28074	LTA-8(18)	1
PART NO. LDW280-11199-11$-13		GAEC SCH NO. 31-4	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -13

GRUMMAN REL INFO A

PRIM NO. 215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY			
LAYOUT BY	J. CALANDRA-5/16		
CHECKED BY			
GR. LDR	J. PUSATERI-5/16		
VDI	W. BISCHOFF-5/16		
STRUCTURES	BUNCE, WHITMAN-5/17	PROJ ENGR	J. ALLEN 5-19
STRUCTURES	R. HILDERMAN-5/18	REL GROUP	BOTTI 5-21-66
WEIGHTS	D. ROBESCH-5/19		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

RIB
ASCENT STAGE - CABIN - EQUIP. LINES

SIZE B
CODE IDENT NO. 26512
LDW280-11199 A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11199 - NO CHANGE - 5-21-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									REDRAWN - NO CHANGE - LAST REV. N.C.-G. KORDES-10/7/66	ADDED SH	1.10				
A	1	1.10,3	4F					EO A1	IN FLD ON-13 DIMENSIONS 1/4 & 1/4 R WERE 1/2 & 1/2 R RESPECTIVELY.	NOT REQ'D	✓		KORDES 10-7-66 EG		

CHG APPROVED

LTR	GROUP LDR	VEH. DES. INT	STRUCTURES	STRUCTURES	WEIGHTS	PROJECT	RELEASE				
A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11199	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11199-13	E	RIB	AL ALLOY SH	QQ-A-250/4	2024	.024×4¼×10⅛	T3/42	88	
								LDW280-11199-11	E	RIB	AL ALLOY SH	QQ-A-250/4	2024	.024×4¼×10⅛	T3/42	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030
						T42	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

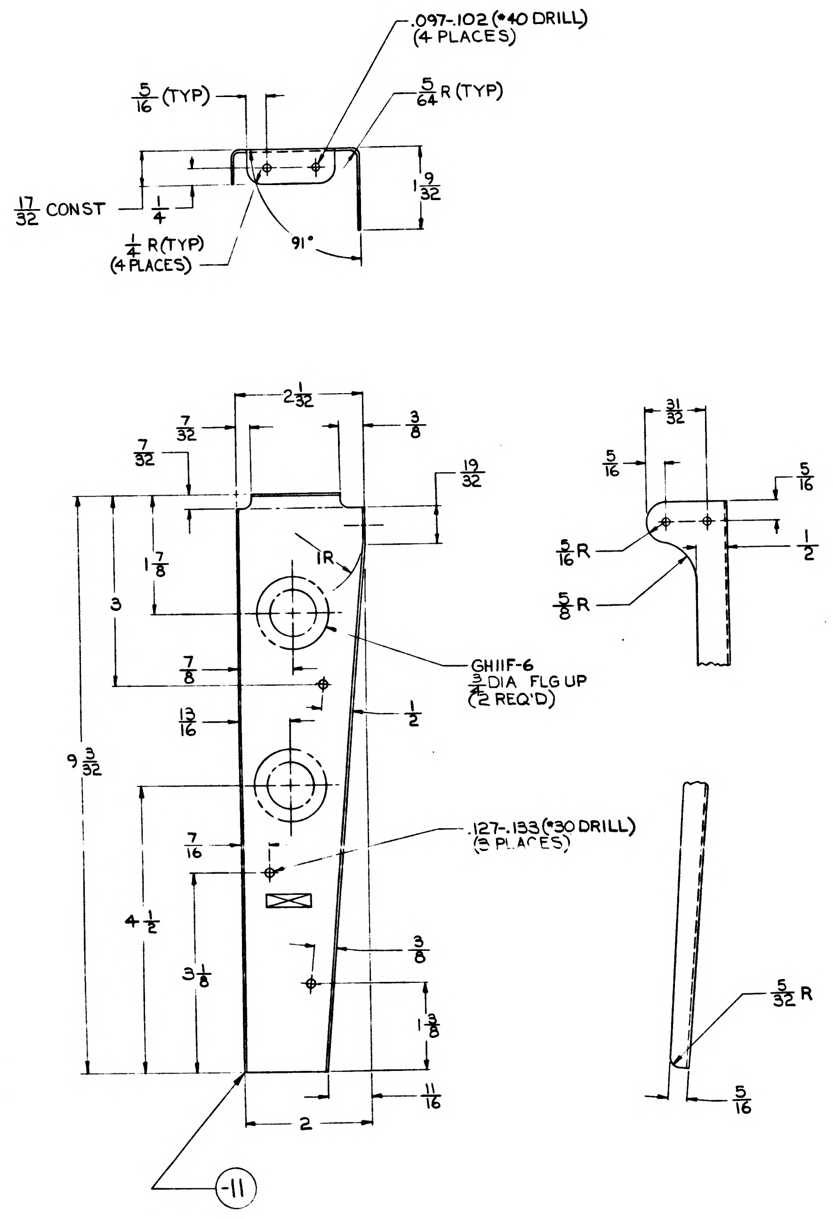
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

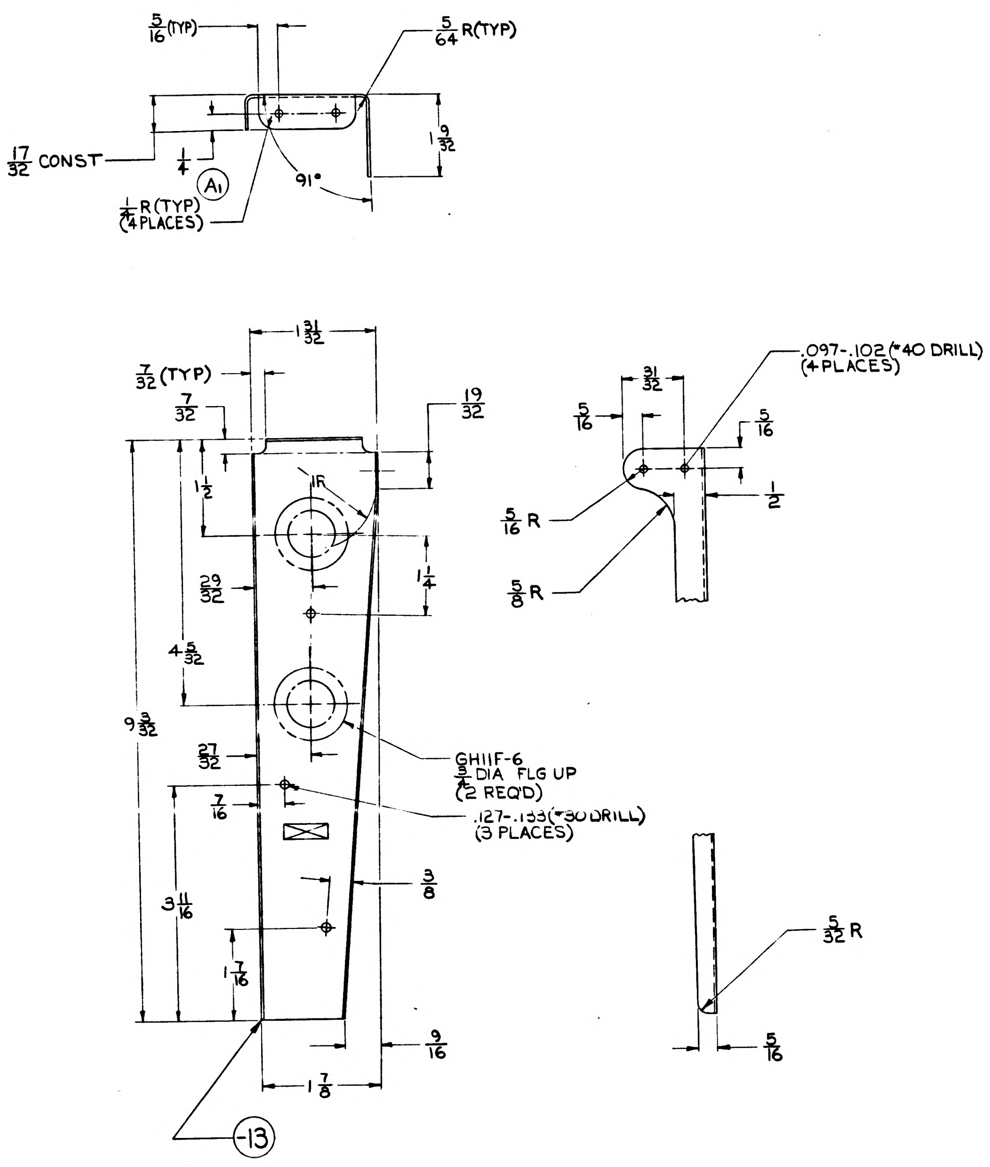
SIZE	CODE IDENT NO.		
B	26512	LDW280-11199	A
SCALE NONE		SHEET 2.00	

ENG 77.2 7-65

01

NAS 9-1100


.097-.102 (#40 DRILL) (4 PLACES)
5/16 (TYP)
5/64 R (TYP)
17/32 CONST
1/4
1 9/32
1/4 R (TYP) (4 PLACES)
91°
2 1/32
7/32
3/8
7/32
19/32
1R
1 7/8
3
7/8
GH11F-6 3/4 DIA FLG UP (2 REQ'D)
13/16
1/2
9 3/32
.127-.133 (#30 DRILL) (3 PLACES)
7/16
4 1/2
3 1/8
3/8
1 3/8
2
11/16
-11
31/32
5/16
5/16
5/16 R
1/2
5/8 R
5/32 R
5/16


5/16 (TYP)
5/64 R (TYP)
17/32 CONST
1/4
A1
1 9/32
1/4 R (TYP) (4 PLACES)
91°
1 31/32
7/32 (TYP)
7/32
19/32
1R
1 1/2
1 1/4
29/32
4 5/32
9 3/32
GH11F-6 3/4 DIA FLG UP (2 REQ'D)
27/32
.127-.133 (#30 DRILL) (3 PLACES)
7/16
3/8
3 11/16
1 7/16
9/16
1 7/8
-13
.097-.102 (#40 DRILL) (4 PLACES)
31/32
5/16
5/16
5/16 R
1/2
5/8 R
5/32 R
5/16

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS 1½ FASTENER DIA	✓
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

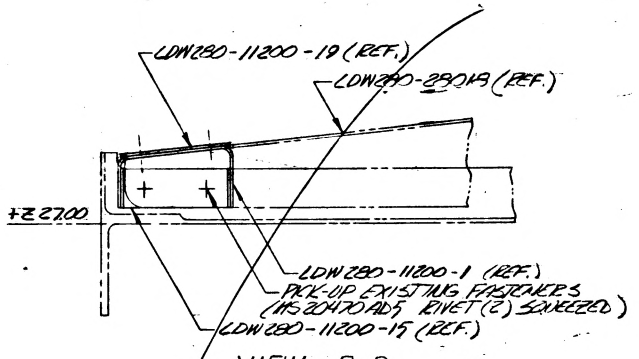
	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
LM	SIZE F	CODE IDENT NO. 26512	LDW280-11199	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

ENG 73-5 6-64

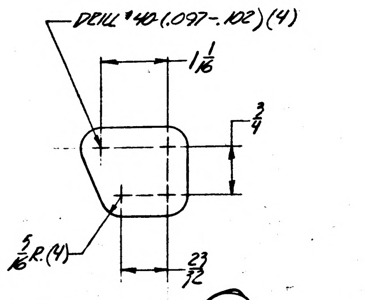
LDW280-11199 A

LDW280-11199 A

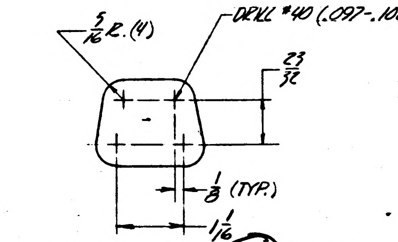
01 NAS 9-1100


LDW280-11200-19 (REF.)
LDW280-28019 (REF.)
+Z 27.00
LDW280-11200-1 (REF.)
PICK-UP EXISTING FASTENERS
(MS20470AD5 RIVET (2) SQUEEZED)
LDW280-11200-15 (REF.)

VIEW B-B
(VIEW SIMILIAR FOR R.H. SIDE)

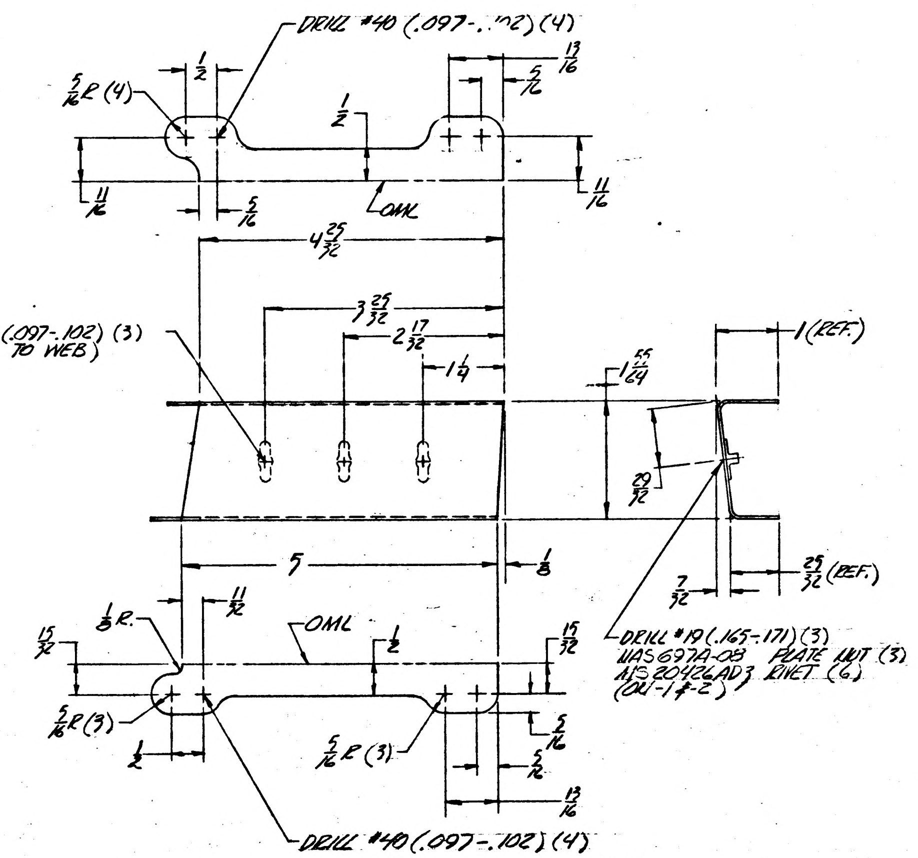

DRILL #40 (.097-.102) (4)
$1\frac{1}{16}$
$\frac{3}{4}$
$\frac{5}{16}$ R. (4)
$\frac{23}{32}$

LDW280-11200-17 GUSSET
.040 AL ALLOY SH~2024-T3~QQ-A-355
H.T. NONE ~ FINISH #88
2 REQD / MODULE


$\frac{5}{16}$ R. (4)
DRILL #40 (.097-.102)(4)
$\frac{23}{32}$
$\frac{1}{8}$ (TYP.)
$1\frac{1}{16}$

LDW280-11200-19 GUSSET
.040 AL ALLOY SH~2024-T3~QQ-A-355
H.T. NONE ~ FINISH #88
2 REQD / MODULE

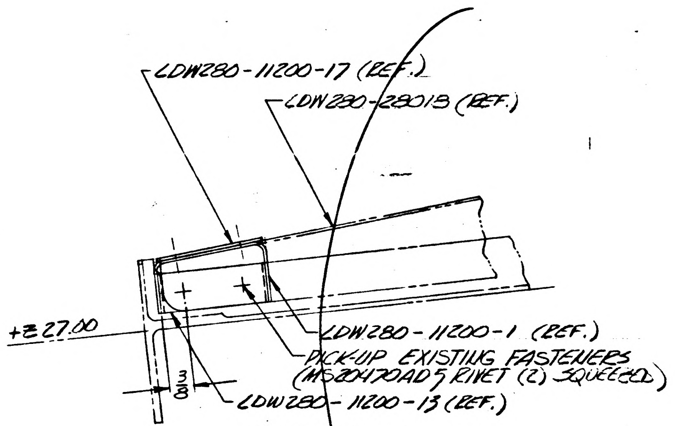
DRILL #40 (.097-.102) (3)
(NORMAL TO WEB)


DRILL #40 (.097-.102) (4)
$\frac{5}{16}$ R (4)
$\frac{1}{2}$
$\frac{13}{16}$
$\frac{5}{16}$
$\frac{1}{2}$
$\frac{11}{16}$
$\frac{5}{16}$
OML
$\frac{11}{16}$
$4\frac{25}{32}$
$3\frac{25}{32}$
$2\frac{17}{32}$
$1\frac{1}{4}$
1 (REF.)
$1\frac{55}{64}$
$\frac{29}{32}$
5
$\frac{1}{8}$
$\frac{7}{32}$
$\frac{25}{32}$ (REF.)
$\frac{1}{8}$ R.
$\frac{11}{32}$
OML
$\frac{15}{32}$
$\frac{1}{2}$
$\frac{15}{32}$
$\frac{5}{16}$ R (3)
$\frac{1}{2}$
$\frac{5}{16}$ R (3)
$\frac{5}{16}$
$\frac{5}{16}$
$\frac{13}{16}$
DRILL #19 (.165-.171) (3)
NAS697A-08 PLATE NUT (3)
MS20426AD3 RIVET (6)
(ON -1 & -2)
DRILL #40 (.097-.102) (4)

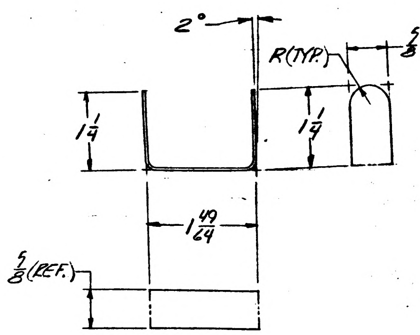
LDW280-11200-1 BRACKET ASSY (SHN)
-2 BRACKET ASSY (OPP)

LDW280-11200-11 BRACKET (SHN)
-12 BRACKET (OPP)

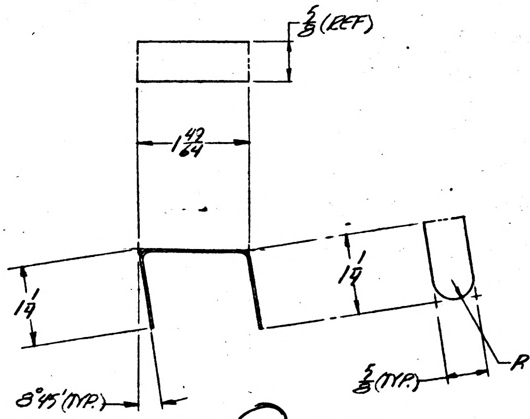
.040 AL ALLOY SH~2024-T3~QQ-A-355
H.T. NONE ~ B.R. 1/8 ~ FINISH #88
1 EA REQD / MODULE


LDW280-11200-17 (REF.)
LDW280-28018 (REF.)
+Z 27.00
LDW280-11200-1 (REF.)
PICK-UP EXISTING FASTENERS
(MS20470AD5 RIVET (2) SQUEEZED)
$\frac{3}{8}$
LDW280-11200-13 (REF.)

VIEW C-C
(VIEW SIMILIAR FOR R.H. SIDE)


2°
R (TYP.)
$\frac{5}{8}$ (TYP.)
$1\frac{1}{4}$
$1\frac{1}{4}$
$1\frac{49}{64}$
$\frac{5}{8}$ (REF.)

LDW280-11200-13 CLIP
.040 AL ALLOY SH~2024-T3~QQ-A-355
H.T. NONE ~ B.R. 1/8 ~ FINISH #88
2 REQD / MODULE


$\frac{5}{8}$ (REF)
$1\frac{42}{64}$
$1\frac{1}{4}$
$1\frac{1}{4}$
8°45' (TYP.)
$\frac{5}{8}$ (TYP.)
R (TYP.)

LDW280-11200-15 CLIP
.040 AL ALLOY SH~2024-T3~QQ-A-355
H.T. NONE ~ B.R. 1/8 ~ FINISH #88
2 REQD / MODULE

01/02
NAS 9-1100

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	[redacted] LSP 14-9030	

RECORD DRAWINGS AND			
MODEL	RECORD DWG NO.	E. O. NO.	MIL

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

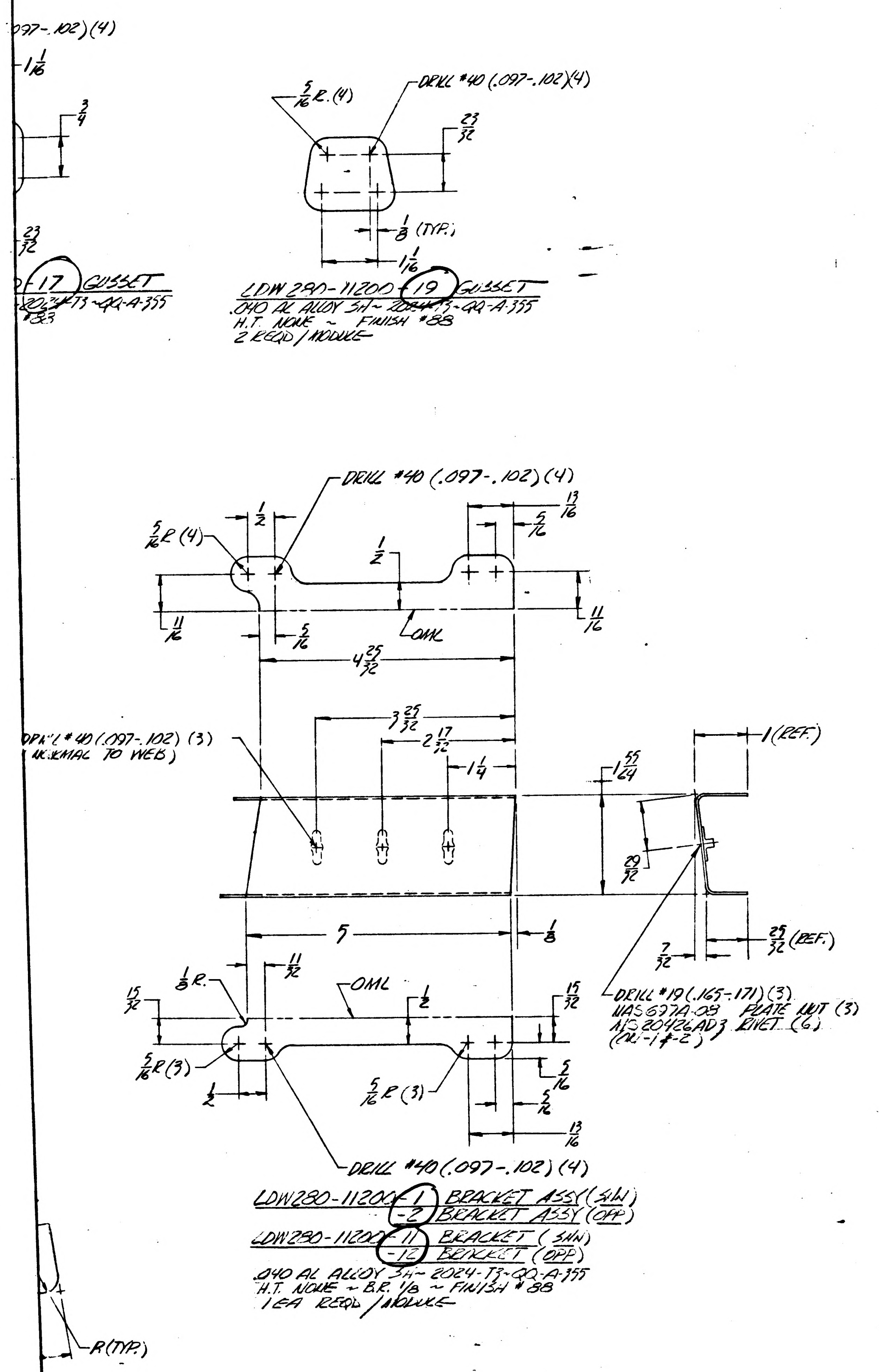
MANUFACTURING OPERATIONS	
NOTES CHECKED √ APPLY TO THIS DWG.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.	
$\sqrt{125}$ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.	
$\sqrt{200}$ FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
INSPECTION INFORMATION MINIMUM PERMISSIBLE FASTENER [redacted] EDGE DISTANCE [redacted] IS $1\frac{1}{2}$ DIA	√
SYMBOL $\sqrt{}$ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN. NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	

NOTES -

1. ALL INFORMATION
REFERENCE PUR PO
LDW280-2
~~LDW280~~
LDW280-1
THE NEXT ASSEMBL
ARE AS FOLLOWS
LDW230-2344
EFFECTIVITY: LT
LDW280-11.20
EFFECTIVITY: L
LDW280-1120
EFFECTIVITY: LT

QTY REQD PER ASSY			PART OR IDENTIFYING

LEM	NOTED	No
MODEL	NEXT ASSY	MODULE [redacted]
PART NUMBER		



.097-.102)(4)
1 1/16
3/4
23/32
-17 GUSSET
.020 ... T3-QQ-A-355
#88
5/16 R (4)
DRILL #40 (.097-.102)(4)
23/32
1/8 (TYP.)
1 1/16
LDW280-11200-19 GUSSET
.040 AL ALLOY SH ~ 2024-T3-QQ-A-355
H.T. NONE ~ FINISH #88
2 REQD / MODULE
DRILL #40 (.097-.102) (4)
5/16 R (4)
1/2
13/16
5/16
1/2
11/16
5/16
OML
4 25/32
11/16
DRILL #40 (.097-.102) (3)
NORMAL TO WEB)
3 25/32
2 17/32
1 1/4
1 55/64
1 (REF.)
29/32
5
1/8
7/32
25/32 (REF.)
1/8 R.
11/32
OML
1/2
15/32
15/32
5/16 R (3)
5/16 R (3)
1/2
5/16
5/16
13/16
DRILL #19 (.165-.171) (3)
NAS697A-08 PLATE NUT (3)
MS 20426AD3 RIVET (6)
(ON -1 & -2)
DRILL #40 (.097-.102) (4)
LDW280-11200-1 BRACKET ASSY (SHN)
-2 BRACKET ASSY (OPP)
LDW280-11200-11 BRACKET (SHN)
-12 BRACKET (OPP)
.040 AL ALLOY SH ~ 2024-T3-QQ-A-355
H.T. NONE ~ B.R. 1/8 ~ FINISH #88
1 EA REQD / MODULE
R (TYP.)

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	LSP 14-9030	

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PS1 ROCKWELL C TO C		

RECORD DRAWINGS AND E.O.'S

MODEL	RECORD DWG NO.	E. O. NO.	MILITARY NO.	APL NO.

REVISIONS

REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY / DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER IBCC NO.	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MILITARY NUMBER	DISPOSITION OF EXIST PARTS: RE-WORK	SCRAP	ENGRG APPD	GOVT APPD

DWG. SIZE 34 X

MANUFACTURING OPERATIONS

NOTES CHECKED √ APPLY TO THIS DWG.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.	
125√ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.	
200√ FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
INSPECTION INFORMATION MINIMUM PERMISSIBLE FASTENER [redacted] EDGE DISTANCE [redacted] IS 1 1/2 DIA	√
SYMBOL ∱ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	

NOTES -

1. ALL INFORMATION PERTAINING TO THE FOLLOWING DRAWINGS IS FOR REFERENCE PURPOSES ONLY.
   LDW280-28448
   ~~LDW280-11200~~
   LDW280-11201
   THE NEXT ASSEMBLY, EFFECTIVITY & NO REQD/MODULE FOR THE ABOVE DRAWINGS ARE AS FOLLOWS -
   LDW280-28448-1 & -3 BRACKET INSTL ~ N.A.: LDW280-28002 ~ EFFECTIVITY: LTA-8 (18), LEM-1 (31), LEM-2 (32) ~ NO REQD/MODULE : NOTED IN F/D.
   LDW280-11200-1, -2, -11, -12, -13, -15, -17 & -19 ~ N.A.: LDW280-28448 ~ EFFECTIVITY: LTA-8 (18), LEM-1 (31), LEM-2 (32) ~ NO REQD/MODULE : NOTED IN F/D.
   LDW280-11201-1, -11, -13, -15 & -17 ~ N.A.: LDW280-28448 ~ EFFECTIVITY: LTA-8 (18), LEM-1 (31), LEM-2 (32) ~ NO. REQD/MODULE : NOTED IN F/D.

02/02 NAS 9-1100

1 & T EXEMPT

QTY REQD PER ASSY			PART OR IDENTIFYING NO.	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE

TO BE REDRAWN ON PRODUCTION FORMAT

5

MODEL	NEXT ASSY			REQD PER MODULE
LEM	NOTED	NOTED		NOTED
		MODULE [redacted]		
PART NUMBER			GRUMMAN SCH INFO 31-1	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED: FRACTIONS - DECIMALS - ANGLES ± 1/32 ±.010 ±0°30'	CHECKED BY		GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., N. Y.
	DRAWN BY	E.L. Harrigan	
	LAYOUT BY		
		VDI	BRACKET ~ ASCENT STAGE
ORIG DWG AUTH	GR LEADER	W. Tigert 5/18/66	MID-SECT ~ +227 EQUIP. LINES
DETAIL SPEC REQUIREMENT	STRUCTURE	BW 5/14	
CLASS II ENGRG CHANGE	STRUCTURE		
CLASS I ENGRG CHANGE	WEIGHTS	5-19	CONTRACT NO. NAS 9-1100
GRUMMAN REL INFO	PROJ ENGR	5-19-66	CODE IDENT NO. 26512 · SIZE J · LDW280-11200
PRIM 2.15	GOVT APPD	Botts 5-21-66	SCALE FULL · SHEET

LINE ITEM #1 DOCUMENTATION TYPE II

THIS IS AN ORIGINAL DWG.

ENG 32.1 REV 3-65

LIAISON ENGINEERING #5

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW280-11200
EO NO. A1
CONTROL INFO NO. LEM-5-7189

IN MOD/BLK (ON-1, -2, -13, -15, -17, & -19)
N/A LDW280-28448 (S/B) LDW280-28488

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO: N/A CHG ON DETLS TO ARGEE WITH INSTL

DESCRIPTION OF EO: IN MOD/BLK (ON-1-2-13-15-17 & -19) N/A LDW280-28488 (WAS) LDW280-28448

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA8(18)	
		LEM1(31)	
		LEM2(32)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO
DISPOSITION OF PARTS: REWORK ✓ SCRAP

		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~
APPROVED BY				—				
DATE	5/24/66			—		5-23-66		5-14-66

PRIORITY: CS
DRAWING TITLE: BRACKET - ASCENT STAGE, MID SECTN + Z27.0 EQUIP LINES
DRAWING NO.: LDW280-11200
EO NO.: A1

ISSUED BY MOREYRES / X3917 / 5-23-66 SECTION VDI / W. TRAUT GROUP NO. 335 PL 35

LDW280-11201 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

LM	LDW280-28488	LM-2(32)	1 EA
LM	LDW280-28488	LM-1(31)	1 EA
LM	LDW280-28488	LTA-8(18)	1 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-11201-1, 13, -15 & -17		GAEC SCH NO. 32	

WORK PGK FUNCTION NO. 110 5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -17

GRUMMAN REL INFO A

PRIM NO.	AK(00)	
215	[illegible]	[illegible]

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ±1/32 ±.010 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM

DOCUMENTATION TYPE II

DRAWN BY	E.L. HARRIGAN 5-14-66	RELIABILITY	
LAYOUT BY	E.L. HARRIGAN 5-14-66		
CHECKED BY			
GR. LEADER	W. TRAUT 5-14-66		
VEH. DES. INT	W. BISCHOFF 5-14-66		
STRUCTURES	F BUNCE 5-14-66	PROJ ENGR	J. ALBER 5-19-66
STRUCTURES		REL GROUP	C. BOTTI 5-21-66
WEIGHTS	D ROBESCH 5-19-67		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT
ASCENT STAGE MID-SECT ~
+ Z 27 EQUIP LINES

SIZE	CODE IDENT NO.		
B	26512	LDW280-11201	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

SUPERSEDES LDW280-11201 NO CHG 5-21-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
								RETRACED	NO CHG LAST-REV N C-N.CIOFFI 2-17-67 ADDED SHEET 1.10, 2.00 & 3.00						
A	1	1.10 & 3.00						EO A1	ON -11 BRACKET ADDED 7/32 OFFSET DIM.	LTA-8 LM-1 & LM-2	✓		N. CIOFFI 3-13-67		
	2	1.10, 2.00 & 3.00						EO A2	IN B/M ON-13 ADDED FIN #88. IN FLD ON-11 ADDED DIM 7/32. IN MOD/BLK ON -1 -13, -15 & -17 N/A LDW280-28488 WAS LDW280-28448.						
	3	1.10							REF TO EO A2 ADDED DIM 7/32 NOT APPLICABLE PREVIOUSLY INCORPORATED ON EO A1						

CHG APPROVED

LTR	GROUP LDR	VEH.DES.INT.	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY				
A	—									

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11201	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY -1	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	MS20426AD3	E		RIVET	STD PART						
3	NAS697A-08	E		PLATE NUT	STD PART						
	LDW280-11201-17	E		GUSSET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 X 3 X 3	NONE	88	
	LDW280-11201-15	E		CLIP	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 X 2 X 5	NONE	88	
	LDW280-11201-13	E		CLIP	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 X 2 X 5	NONE	88	
1	LDW280-11201-11	E		BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 X 5 X 6	NONE	88	
	LDW280-11201-1	E		BRACKET ASSY							

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP 14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE B | CODE IDENT NO. 26512 | LDW280-11201 | A

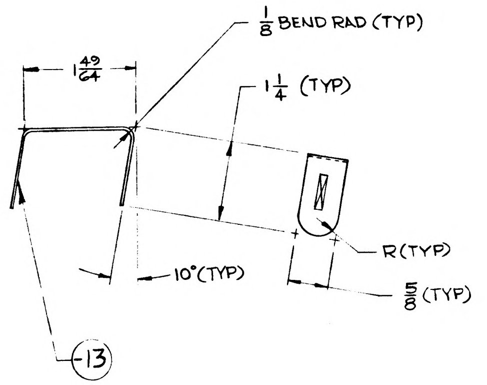
SCALE NONE | SHEET 2.00

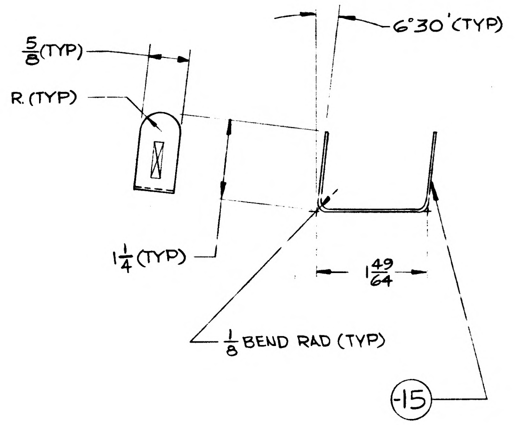
ENG 77.2 5-64

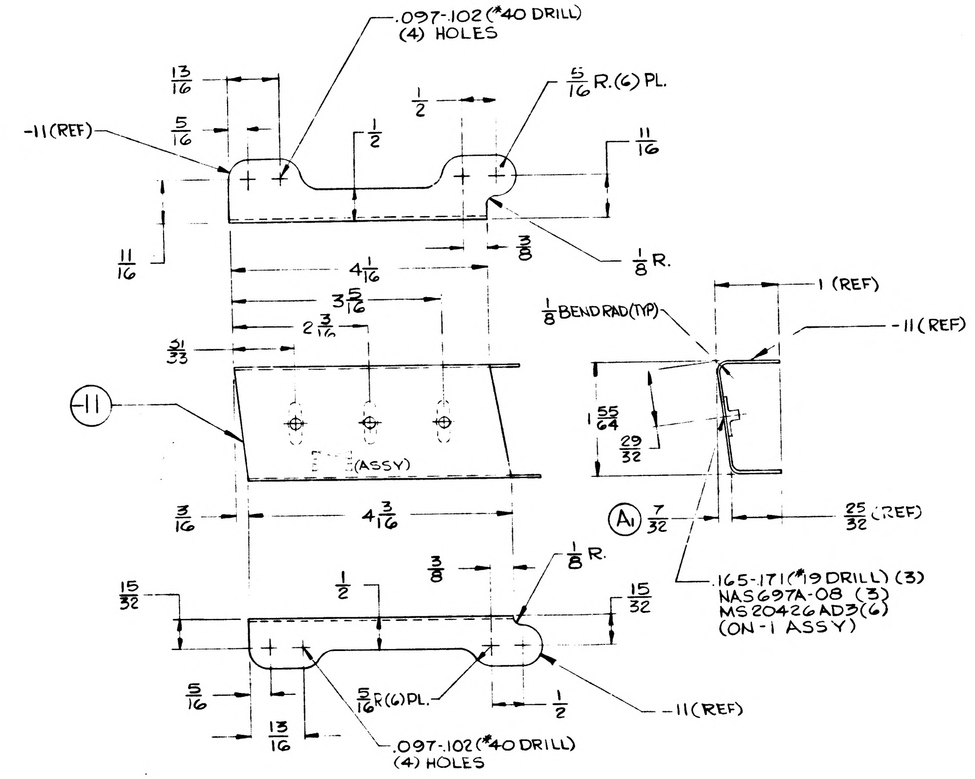
01

NAS 9-1100

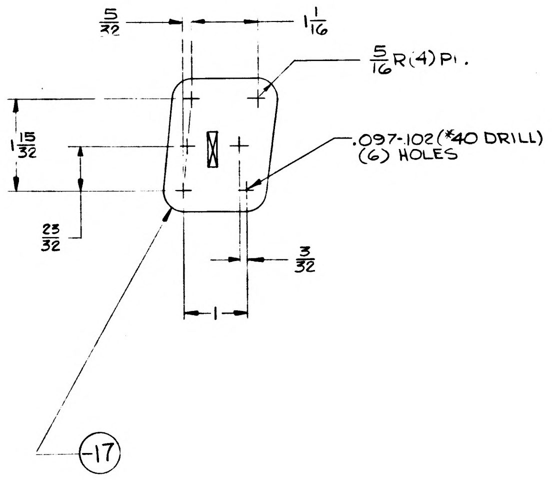
NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. INSTALL FASTENERS PER LSP 14-15302.


1/8 BEND RAD (TYP)
1 49/64
1 1/4 (TYP)
R (TYP)
10° (TYP)
5/8 (TYP)
-13


5/8 (TYP)
R (TYP)
6°30' (TYP)
1 1/4 (TYP)
1 49/64
1/8 BEND RAD (TYP)
-15


.097-.102 (#40 DRILL)
(4) HOLES
13/16
5/16
-11 (REF)
1/2
1/2
5/16 R. (6) PL.
11/16
11/16
3/8
1/8 R.
4 1/16
3 5/16
2 3/16
31/33
-11
(ASSY)
1/8 BEND RAD (TYP)
1 (REF)
-11 (REF)
1 55/64
29/32
A1
7/32
25/32 (REF)
3/16
4 3/16
3/8
1/8 R.
15/32
1/2
15/32
.165-.171 (#19 DRILL) (3)
NAS697A-08 (3)
MS20426AD3 (6)
(ON -1 ASSY)
5/16
5/16 R (6) PL.
1/2
-11 (REF)
13/16
.097-.102 (#40 DRILL)
(4) HOLES

LDW280-11201-1 ASSY


5/32
1 1/16
5/16 R (4) PL.
.097-.102 (#40 DRILL)
(6) HOLES
1 15/32
23/32
3/32
1
-17

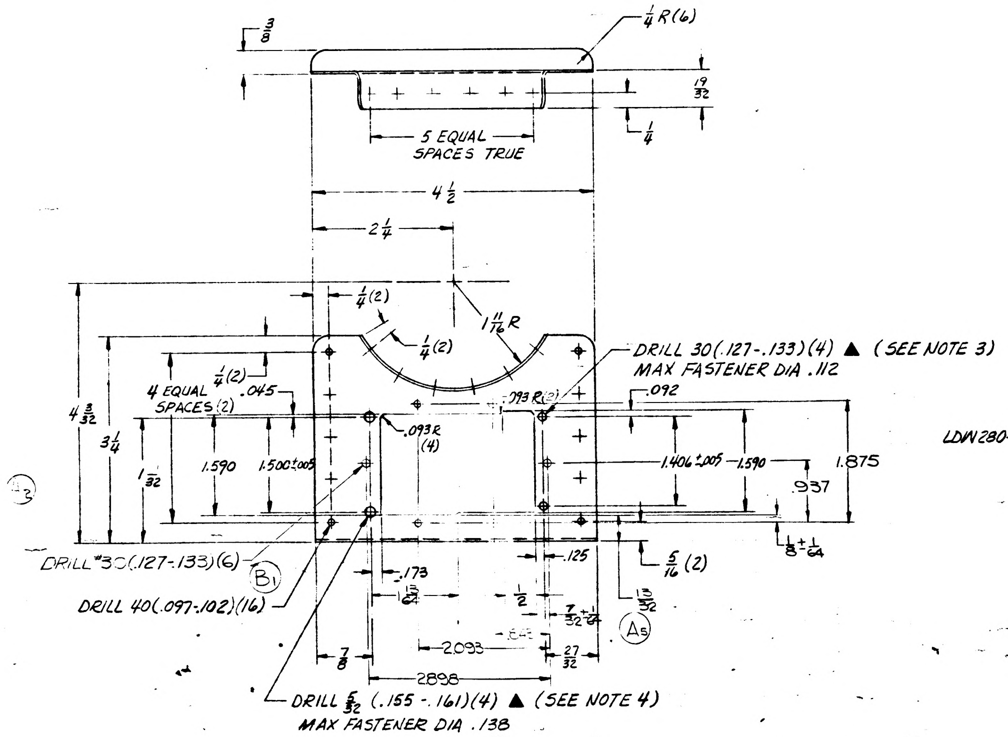
MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LM	SIZE F	CODE IDENT NO. 26512	LDW280-11201	A
MODEL OR END ITEM	SCALE - FULL		SHEET 3. OC	

LDW280-11201 A

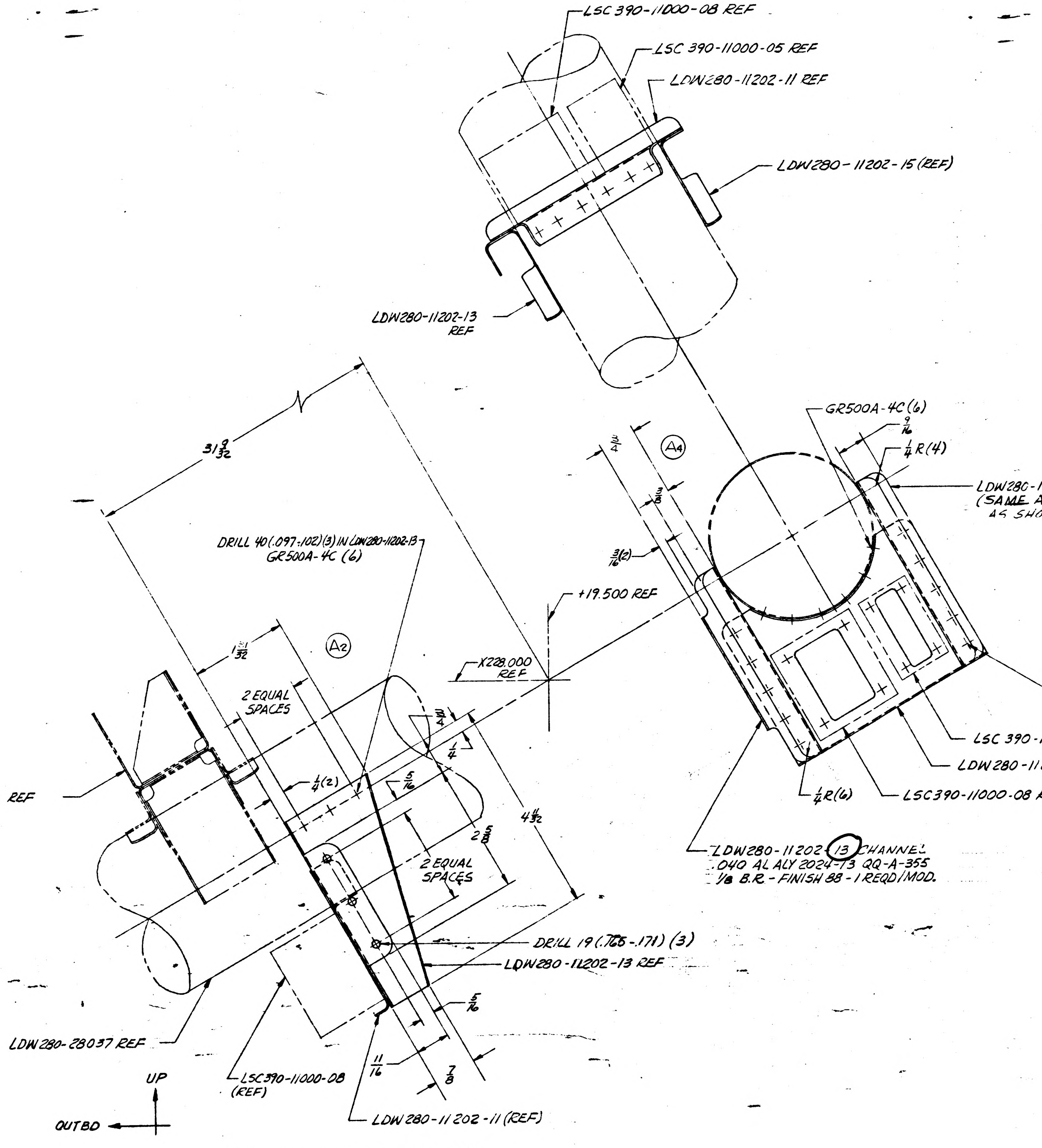
LDW280-11201 A

01/02 **NAS 9-1100**

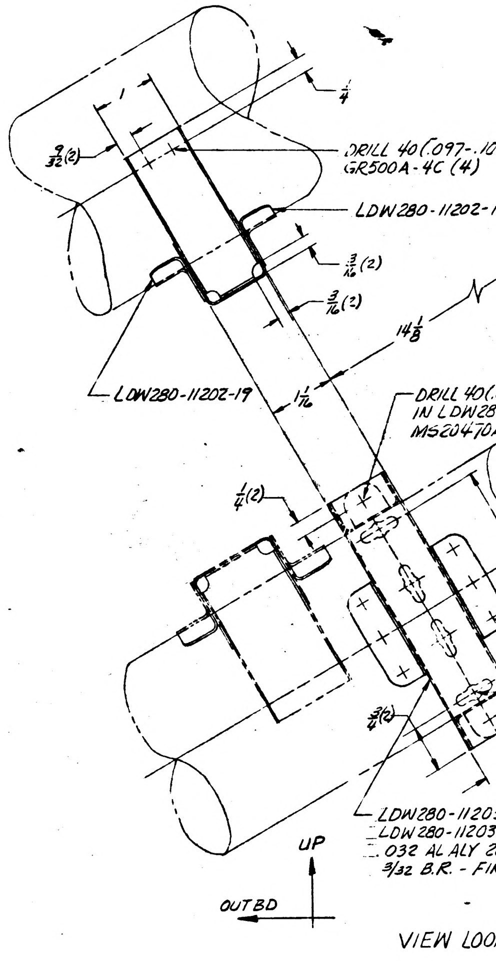

3/8
1/4 R(6)
19/32
1/4
5 EQUAL SPACES TRUE
4 1/2
2 1/4
1/4(2)
1 11/16 R
1/4(2)
DRILL 30(.127-.133)(4) ▲ (SEE NOTE 3)
MAX FASTENER DIA .112
1/4(2)
4 EQUAL SPACES(2)
.045
.092
.093 R(2)
4 3/32
3 1/4
1 1/32
1.590
1.500±.005
.093R (4)
1.406±.005
1.590
1.875
.937
DRILL #30(.127-.133)(6)
B1
DRILL 40(.097-.102)(16)
.125
5/16 (2)
1/8 +1/64
.173
13/64
1/2
13/32
7/32 +1/64
A5
7/8
2.093
27/32
2898

DRILL 5/32 (.155-.161)(4) ▲ (SEE NOTE 4)
MAX FASTENER DIA .138

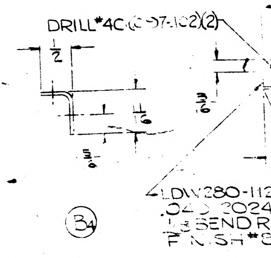
LDW280-11202-(11) SUPPORT
.040 AL ALY 2024 QQ-A-355 H.T.-T31-T42
1/8 B.R. - FINISH 88 - 1 REQD/MOD.


LSC 390-11000-08 REF
LSC 390-11000-05 REF
LDW280-11202-11 REF
LDW280-11202-15 (REF)
LDW280-11202-13 REF
31 9/32
A4
GR500A-4C (6)
9/16
1/4 R(4)
LDW280-11202 (15) CHANNEL
(SAME AS LDW280-11202-13 EXCEPT AS SHOWN)
3/16(2)
+19.500 REF
DRILL 40(.097-.102)(3) IN LDW280-11202-13 GR500A-4C (6)
1 31/32
A2
X228.000 REF
2 EQUAL SPACES
LDW280-28336 REF
1/4(2)
5/16
1/4
4 3/32
2 5/8
2 EQUAL SPACES
MS20470AD4 (10)
LSC 390-11000-05 REF
LDW280-11202-11
1/4 R(6)
LSC390-11000-08 REF
LDW280-11202-(13) CHANNEL
.040 AL ALY 2024-T3 QQ-A-355
1/8 B.R. - FINISH 88 - 1 REQD/MOD.
DRILL 19(.166-.171) (3)
LDW280-11202-13 REF
5/16
LDW280-28037 REF
11/16
7/8
LSC390-11000-08 (REF)
LDW280-11202-11 (REF)
UP
OUTBD

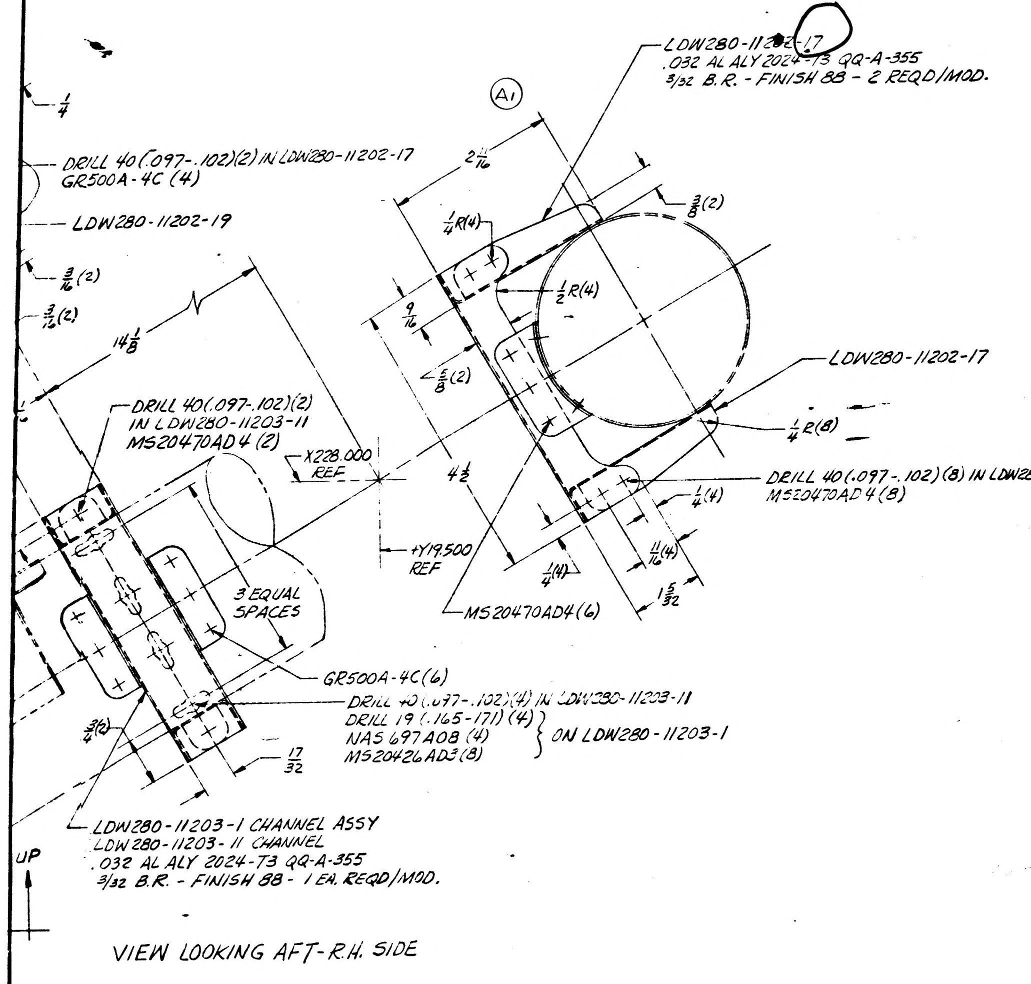
VIEW LOOKING AFT - R.H. SIDE
LDW280-28489-1 INSTL
1 REQD/MOD


1/4
9/32(2)
DRILL 40(.097-.1
GR500A-4C (4)
LDW280-11202-
3/16(2)
3/16(2)
14 1/8
LDW280-11202-19
1 1/16
DRILL 40(
IN LDW28
MS20470
1/4(2)
3/16(2)
LDW280-1120
LDW280-1120
.032 AL ALY 2
3/32 B.R. - FI
UP
OUTBD

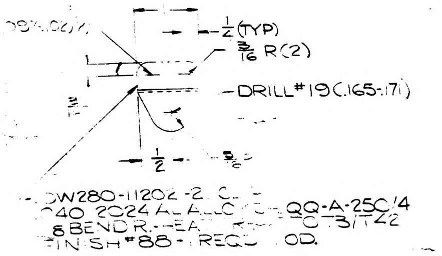
VIEW LOO

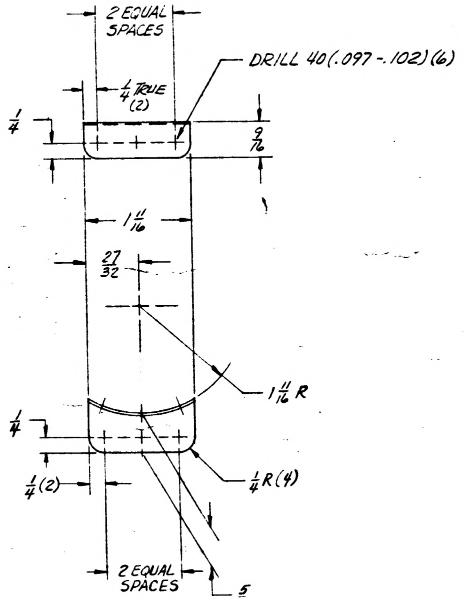

DRILL #40(.097-.102)(2)
1/2
B4
LDW280-112
.0 2024
END R
FINISH

RECORD DATA		
MODEL	E.O. NO.	EFFECTIVITY
LEM	E.O. A5	LTA-8
LEM	E.O. B1	LTA-8


A1
LDW280-11202-17
.032 AL ALY 2024-T3 QQ-A-355
3/32 B.R. - FINISH 88 - 2 REQD/MOD.
1/4
DRILL 40(.097-.102)(2) IN LDW280-11202-17
GR500A-4C (4)
LDW280-11202-19
3/16(2)
3/16(2)
14 1/8
2 11/16
1/4 R(4)
3/8(2)
1/2 R(4)
9/16
5/8(2)
LDW280-11202-17
1/4 R(8)
DRILL 40(.097-.102)(2)
IN LDW280-11203-11
MS20470AD4 (2)
X228.000
REF
4 1/2
DRILL 40(.097-.102)(8) IN LDW280-11203-11
MS20470AD4(8)
1/4(4)
+Y19.500
REF
1/4(4)
11/16(4)
1 5/32
3 EQUAL
SPACES
MS20470AD4(6)
GR500A-4C(6)
DRILL 40(.097-.102)(4) IN LDW280-11203-11
DRILL 19 (.165-.171) (4)
NAS 697A08 (4)
MS20426AD3(8)
ON LDW280-11203-1
3/4(2)
17/32
LDW280-11203-1 CHANNEL ASSY
LDW280-11203-11 CHANNEL
.032 AL ALY 2024-T3 QQ-A-355
3/32 B.R. - FINISH 88 - 1 EA. REQD/MOD.
UP

VIEW LOOKING AFT-R.H. SIDE


1/2 (TYP)
3/16 R(2)
DRILL #19(.165-.171)
1/2
LDW280-11202-2 C
.040 2024 AL ALLOY QQ-A-250/4
BEND R. HEAT T3/T42
FINISH #88 - 1 REQD MOD.


2 EQUAL
SPACES
DRILL 40(.097-.102)(6)
1/4 TRUE
(2)
1/4
9/16
1 11/16
27/32
1 11/16 R
1/4
1/4 R(4)
1/4(2)
2 EQUAL
SPACES
5/8

LDW280-11202-19 CLIP
.032 AL ALY 2024 QQ-A-355 H.T. -T3/-T42
3/32 B.R. - FINISH 88 - 2 REQD/MOD.

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	~~G. S. S.~~ LSP14-9030	

RECORD DRAWINGS AND E.O'S				
MODEL	RECORD DWG NO.	E. O. NO.	MILITARY NO.	APL NO.

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
T3/T42	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PS1 ROCKWELL C TO C		

MANUFACTURING OPERATIONS

NOTES CHECKED V APPLY TO THIS DWG.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.

REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.

125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.

200 √ FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.

FILLET AND INSIDE CORNER RADII TOLERANCES
.016R TO .062R ± .010
.063R TO .250R ± .015
OVER .250R ± .030

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.

MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS

SYMBOL ƒ DENOTES SURFACE TO BE MACHINED

UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN. NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.

REVISIONS

REVISION LETTER	ITEM NO.	ZONE	GRUMMAN INFO ONLY DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER IBCC NO.	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MILITARY NUMBER	DISPOSITION OF EXIST PARTS RE-WORK	SCRAP	ENGRG APPD	GOVT APPD
A	1						E.O. A1	IN FLD FOR -17, 2 11/16 (WAS 2 7/16)	R. GIORDANO 10-24-67	LTA-8 LEM-1 & -2	✓			
	2						E.O. A2	ON-11 SUPPORT 1 31/32 DIM. WAS 1 15/32 DIM. ON -13 CHANNEL ADDED 3/4 DIM., & 1 31/32 DIM WAS 1 15/16 DIM.		LTA-3 LEM-1 LEM-2	✓			
	3						E.O. A3	TO -11, -13, -15, -17, -19 ADD EFFECTIVITIVES LEM-3 THRU LEM-15		NOTED	NOT REQD			
	4						E.O. A4	IN FLD, FOR -13, 3/4 WAS 9/16		LTA-8 LEM-1 THRU LEM-15	✓			
	5						E.O. A5	RESTRICTED EFF ON -11, -13 -15 TO LEM-1(31), -2(32) -3(33) & LTA-8(18) ENLARGED CUTOUT IN -11		LEM-1(31) LEM-2(32) LEM-3(33) LTA-8(18)	✓	✓		
B	1						E.O. B1	ON -11 ADDED #30(.127-.133) (6) & ASSOC. DIMS	R. GIORDANO 10-24-67	LTA-8(18) LEM-1(31) LEM-2(32) LEM-3(33)	✓			
	2						E.O. B2	TO -13, ADDED EFF LEM-4 THRU LEM-15		LEM-4(34) THRU LEM-15(45)	NOT REQD			
	3						E.O. B3	REF E.O. A5 & B1. ADDED E.O. TO RECORD BLOCK FOR LTA-8		LTA-8(18)	✓			
	4			✓			E.O. B4	ADDED -21		LEM-3(33)	NOT REQD			
	5		R	✓			E.O. B5 LCD1078 CCA566	ADDED LEM-2(32) EFF TO -21 L.D.		LEM-2(32)	✓			

NOTES:
1. ALL INFORMATION PERTAINING TO THE FOLLOWING DRAWINGS IS FOR REFERANCE PURPOSES ONLY:
   LDW280-28489
   ~~LDW280-11202~~
   LDW280-11203
2. THE NEXT ASSY, EFFECTIVITY AND NO. REQD FOR THE ABOVE ARE AS FOLLOWS:
   LDW280-28489-1
      NEXT ASSY - LDW280-28037
      EFF - LTA-8, LEM-1, LEM-2
      NO REQD - SEE F/D
   LDW280-11202-~~11, 13, 15,~~ 17, -19 & ~~LDW280-203-1~~
      NEXT ASSY - LDW280-28489
      EFF - LTA-8, LEM-1, LEM-2, LEM-3 THRU LEM-15
      NO. REQD - SEE F/D.
3. FOR HOLES MARKED ▲ SEE DRAWING LSC 390-11000-05 FOR CORRESPONDING HOLE PATTERN.
4. FOR HOLES MARKED ▲ SEE DRAWING LSC 390-11000-08 FOR CORRESPONDING HOLE PATTERN.
5. INSTALL GR500A PER LSP14-15303.
6. THE NEXT ASSY, EFFECTIVITY AND NO. REQD FOR LDW280-11202-11 & -15 ARE AS FOLLOWS:
   NEXT ASSY - LDW280-28489
   EFF - LTA-8, LEM-1, LEM-2, LEM-3
   NO. REQD - SEE F/D
7. THE NEXT ASSY, EFFECTIVITY AND NO. REQD FOR LDW280-11202-13 IS AS FOLLOWS:
   NEXT ASSY - LDW280-28489
   EFF - LTA-8 LEM-1 THRU LEM-15
   NO. REQD - SEE F/D
8. THE NEXT ASSY, EFFECTIVITY AND NO. REQD FOR LDW280-11202-21 IS AS FOLLOWS:
   NEXT ASSY - LDW280-28489
   EFF - LEM-2 AND LEM-3
   NO. REQD - SEE F/D.

02/02 NAS 9-1100

~~TO BE REDRAWN ON PRODUCTION FORMAT~~
I & T EXEMPT

QTY REQD PER ASSY	PART OR IDENTIFYING NO.	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE

MODEL	NEXT ASSY	~~MODULE~~ ~~MILITARY NUMBER~~	APL NO.	REQD PER APL
LEM	NOTED	NOTED		NOTED

PART NUMBER
GRUMMAN SCH INFO 31-2

TO BE REDRAWN ON PRODUCTION FORMAT

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED: FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.010 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE
GRUMMAN REL INFO
215

DRAWN BY J. CARROLL 5/13/66 R
LAYOUT BY
CHECKED BY
GR LEADER D. Trant 5/14/66
STRUCTURE
WEIGHTS
PROJ ENGR 5-19-66
GOVT APPD 5-21-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

SUPPORT ~ ASCENT STAGE ~ MIDSECT
DEAD FACE RELAY ~ RH TRUSS

CONTRACT NO. NAS 9-1100
CODE IDENT NO. 26512
SIZE J
LDW280-11202 B
SCALE FULL
SHEET 1 OF 1

DOCUMENTATION TYPE II LINE ITEM #1

THIS IS AN ORIGINAL DWG.

LDW280-11203 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23019	LTA-3 (13)	1

PART NO. LDW280-11203-19 GAEC SCH NO. 32

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28333	LM-2 (32)	1EA
LM	LDW280-28333	LM-1 (31)	1EA
LM	LDW280-28333	LTA-8 (18)	1EA

PART NO. LDW280-11203-15 & 17 GAEC SCH NO. 32

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28028	LM-2(32)	1
LM	LDW280-28028	LM-1(31)	1
LM	LDW280-28028	LTA-8(18)	1
LDW 280-11203-13			
LM	LDW280-28489	LM-15(45)	1
		LM-14(44	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7 (37)	1
		LM-6 (36)	1
		LM-5(35)	1
		LM-4(34)	1
		LM-3(33)	1
		LM-2(32)	1
		LM-1(31)	1
LM	LDW280-28489	LTA-8 (18)	1

PART NO. LDW280-11203-1 GAEC SCH NO. 31

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED

LAST DASH NO. USED -19

GRUMMAN REL INFO A

PRIM NO. VE001 207 MP-14 A+21-1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.010 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 LINE ITEM 1 DOCUMENTATION TYPE II

DRAWN BY	J. CARROLL	5-13-66	RELIABILITY	
LAYOUT BY				
CHECKED BY	JR	5-14-66		
GR LEADER	W. TRAUT	5-14-66		
VEH DES INT	W. BISCHOFF	5-14-66		
STRUCTURES	FEB /GW	5-14-66	PROJ ENGR	J ALBER/RMC 5-19-66
STRUCTURES			REL GROUP	BOTTI 5-21-66
WEIGHTS	D. ROBESCH/DJL	5-19-66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHANNEL ASSY
ASCENT STAGE MID-SECT DEAD
FACE RELAY RIGHT HAND TRUSS

SIZE B CODE IDENT NO. 26512 LDW280-11203 A

SCALE NONE SHEET 1.00 OF 3

ENG 77.1 12-65

THIS DWG SUPERSEDES LDW280-11203 NO CHANGE 5-21-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
									RETRACED NO CHG LAST REV NO CHG, LOFTED DWG WAS DIM ADDED SHEETS 1.10, 2.00 & 3.00 C. CASTELLANO 10-27-66						
A	1	1.00, 1.10 2.00 & 3.00						EO-A1	ADDED -13	LTA-8, LM-1 & LM-2	NOT	REQD	C. J. CASTELLANO 10-27-66	1-19-67	
	2	1.00, 1.10 2.00 & 3.00						EO-A2	ADDED -15						
	3	1.00, 1.10 2.00 & 3.00						EO-A3	ADDED LDW280-11203-17 PLATE						
	4	1.00, 1.10 2.00 & 3.00						EO-A4	ADDED 1 REQD OF LDW280-11203-19	LTA-3					
	5	1.00 & 1.10						EO-A5	TO LDW280-28203-1 ADDED EFFECTIVIES LM-3 THRU LM-15	NOTED					
	6	1.00 & 1.10							DESIGN CHG REF EO-A5 LDW280-28203-1 S/B LDW280-11203-						

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY
A	1/16/67		1-18			

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11203	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY						-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								MS20470AD3	E	RIVET	STD PART						
						4		NAS697A08		NUT PLATE	STD PART						
								LDW280-11203-19		DOUBLER	AL ALY SH	QQ-A-250/4	2024-T3	.040 X 6 X 9	NONE	38	
								-17		PLATE	AL ALY SH	QQ-A-250/4	2024-T3	.032 X 2 X 7	NONE	76	
								-15		PLATE	AL ALY SH	QQ-A-250/4	2024-T3	.063 X 3 X 3	NONE	88	
								-13		DISC	AL ALY SH	QQ-A-250/12	7075-T6	.032 X 3 X 3	NONE	38	
						1		-11		CHANNEL	AL ALY SH	QQ-A-250/4	2024-T3	.032 X 4 X 5	NONE	88	
								LDW280-11203-1	E	CHANNEL ASSY					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

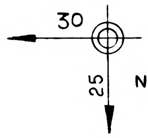
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11203	A
SCALE NONE		SHEET 2.00	

ENG 77.2 7-65

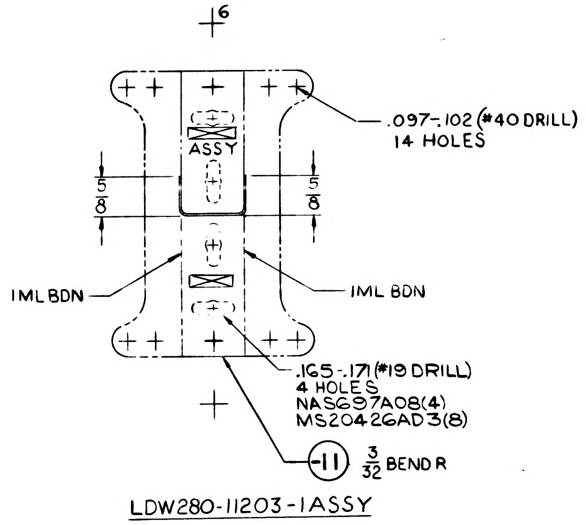
01

NAS 9-1100

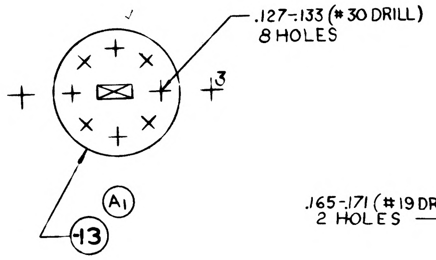


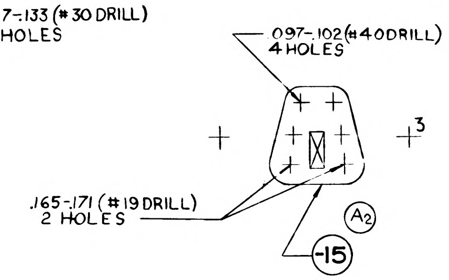
NOTE
1. FOR HOLES MARKED ▲ SEE DWG LDW280M10394 FOR CORRESPONDING HOLE PATTERN

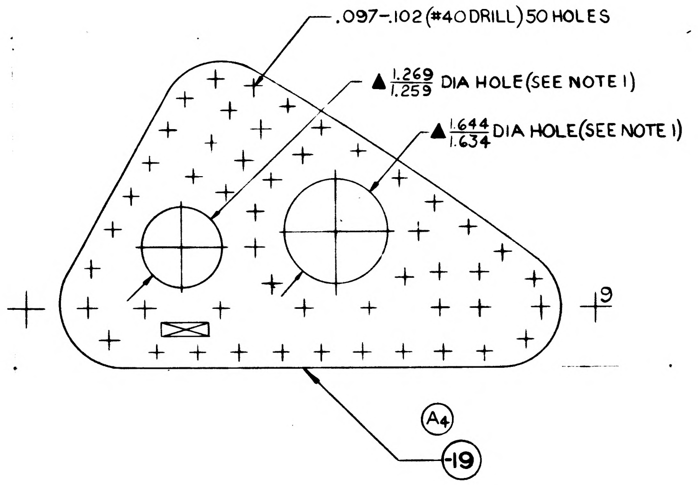
MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

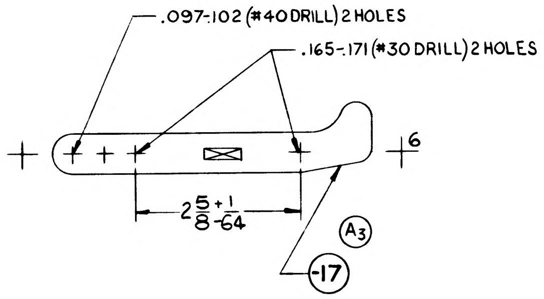

6
.097-.102 (#40 DRILL)
14 HOLES
ASSY
5/8
5/8
IML BDN
IML BDN
.165-.171 (#19 DRILL)
4 HOLES
NAS697A08(4)
MS20426AD3(8)
-11
3/32 BEND R

LDW280-11203-1ASSY


.127-.133 (#30 DRILL)
8 HOLES
3
A1
-13


.097-.102 (#40 DRILL)
4 HOLES
3
.165-.171 (#19 DRILL)
2 HOLES
A2
-15


.097-.102 (#40 DRILL) 50 HOLES
▲ 1.269/1.259 DIA HOLE (SEE NOTE 1)
▲ 1.644/1.634 DIA HOLE (SEE NOTE 1)
9
A4
-19


.097-.102 (#40 DRILL) 2 HOLES
.165-.171 (#30 DRILL) 2 HOLES
6
2 5/8 +1/64 −
A3
-17

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	F	26512	LDW280-11203	A
	SCALE FULL		SHEET 300	

FOR PHOTO REPRODUCTION

LDW280-11203 A

01 NAS 9-1100

LDW280-11204 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53476	LM-15(45)	2
		LM-14(44)	2
		LM-13(43)	2
		LM-12(42)	2
		LM-11(41)	2
		LM-10(40)	2
		LM-9(39)	2
		LM-8(38)	2
		LM-7(37)	2
		LM-6(36)	2
		LM-5(35)	2
		LM-4(34)	2
	LDW280-53476	LM-3(33)	2
	LDW280-28476	LM-2(32)	2
	LDW280-28476	LM-1(31)	2
LM	LDW280-28476	LTA-8(18)	2

PART NO.
LDW280-11204-19

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53476	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(39)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
		LM-4(34)	1
LM	LDW280-53476	LM-3(33)	1

PART NO.
LDW280-11204-21

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28476	LM-2(32)	1
LM	LDW280-28476	LM-1(31)	1
LM	LDW280-28476	LTA-8(18)	1

PART NO.
LDW280-11204-17

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53476	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
		LM-4(34)	1
	LDW280-53476	LM-3(33)	1
	LDW280-28476	LM-2(32)	1
	LDW280-28476	LM-1(31)	1
LM	LDW280-28476	LTA-8(18)	1

PART NO.
LDW280-11204-11,-13,-15
GAEC SCH NO. 32

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED ~
LAST DASH NO. USED -21
GRUMMAN REL INFO A
PRIM NO. 215 EMF

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	ROCKLEIN 5-13
LAYOUT BY	ROCKLEIN 5-13
CHECKED BY	
GP LEADER	B.PHILLIPS 5-13-66
VEH DES INT	W.BISCHOFF 5-13
STRUCTURES	FB BW 5-13
STRUCTURES	HILDERMAN 5-14
WEIGHTS	ROBESCH 5-17-66
PROJ ENGR	J.ALBER, RMC 5-15
REL GROUP	A.CARAMANICA 5-21

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DOUBLER
ASCENT STAGE, MID SECT,
SHIELD SUPPORT, x253.5 DECK

SIZE B
CODE IDENT NO. 26512
LDW280-11204 A
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW280-11204 NC 5-21-66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
		RETRACED		NO CHG	LA	ST	T	REV. NO CHG.	ADDED SH 1.10, 2.00 & 3.00 LOFTED DWG WAS DIM. M.	PACHOLIK	10-19	-66			
A	1	1.00, 1.10					ⓔ	LEO280-297	FOR -11, -13, -15, -19 & -21 ADDED LM-7 THRU LM-15 EFF.	NOTED	NOT	REQD	Pacholik 10-19-66		

CHG APPROVED											
LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS						
A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11204	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11204-21	E	DOUBLER	AL ALLOYSH	QQ-A-250/12	7075-T6	.020X 3 X 3	NONE	88	
		19		PLATE				.040X 2 X 9			
		17		DOUBLER				.020X 2 X 9			
		-15						.020X 2 X 10			
		-13						.020X 2 X 10			
		LDW280-11204-11	E	DOUBLER	AL ALLOYSH	QQ-A-250/12	7075-T6	.020X 2 X 10	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11204	A

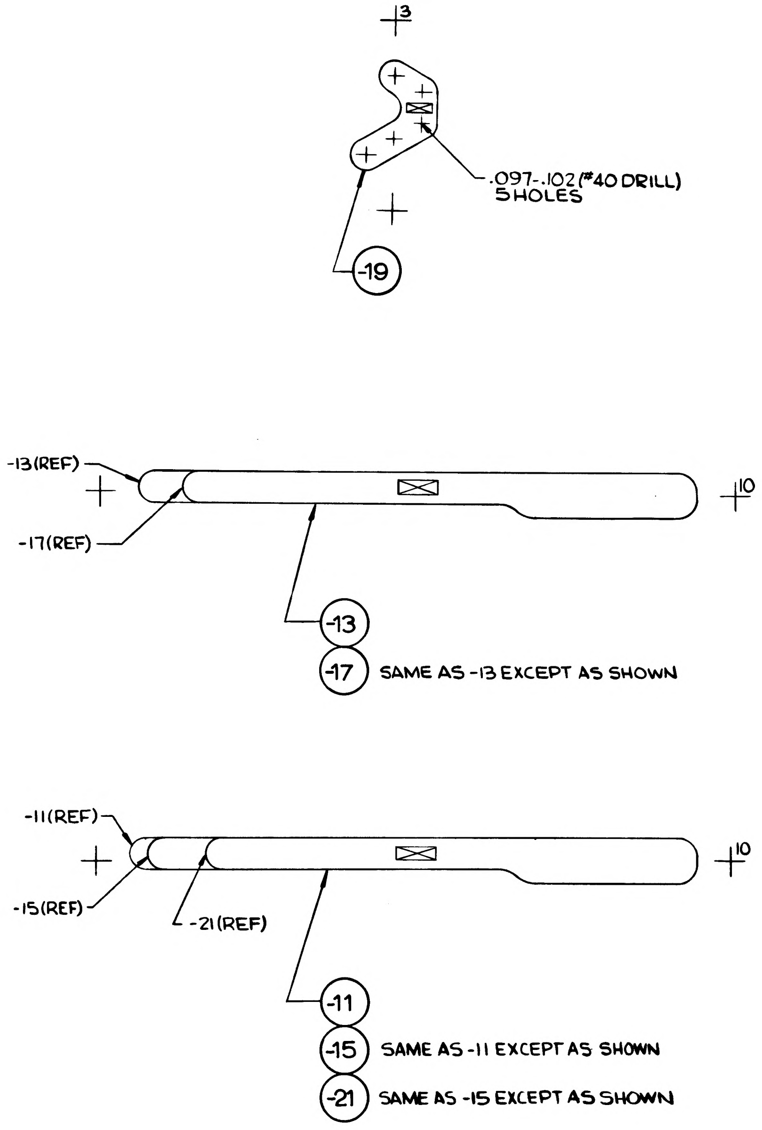
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBERSTAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	✓

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.		
LM	D	26512	LDW280-11204	A
	SCALE FULL			SHEET 3.00

FOR PHOTO REPRODUCTION

LDW280-11204 A

01 NAS 9-1100

MANUFACTURING OPERATIONS

NOTES CHECKED ✓ APPLY TO THIS DWG.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.

REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.

125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.

200 √ FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.

FILLET AND INSIDE CORNER RADII TOLERANCES
.016R TO .062R ± .010
.063R TO .250R ± .015
OVER .250R ± .030

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.

MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

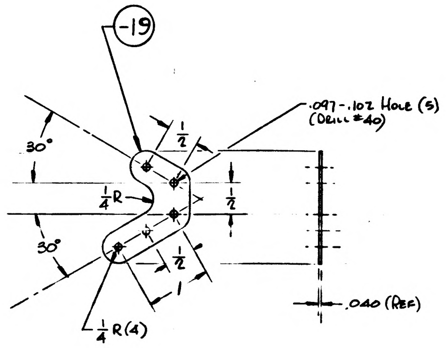
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS

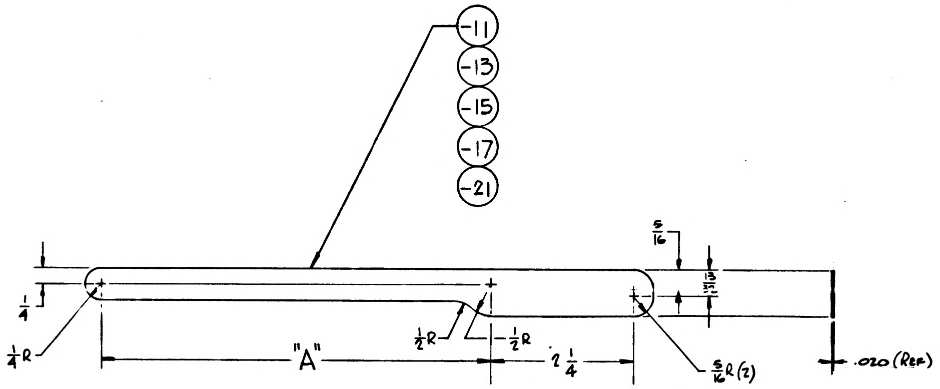
SYMBOL ƒ DENOTES SURFACE TO BE MACHINED

UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

REVISIONS

REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY / DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MODULE NUMBER	DISPOSITION OF EXIST PARTS: RE-WORK	SCRAP	ENGRG APPD	GOVT APPD





DASH NO.	DIMENSION "A"
-21	4 15/16
-17	5 9/32
-15	5 27/32
-13	5 31/32
-11	6 1/8

NAS 9-1100

01

"To Be ReDrawn on Production Format"

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	LSP14-9030	

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

ENG. 093 8-60

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
LEM	LDW 280-53476	LEM-6 (36)	2
LEM	LDW 280-53476	LEM-5 (35)	2
LEM	LDW 280-53476	LEM-4 (34)	2
LEM	LDW 280-53476	LEM-3 (33)	2
LEM	LDW 280-28476	LEM-2 (32)	2
LEM	LDW 280-28476	LEM-1 (31)	2
LEM	LDW 280-28476	LTA-8 (18)	2

PART NO. LDW 280-11204-19 GRUMMAN SCH INFO 32-2

MODEL	NEXT ASSY	MODULE NO.	REQ D PER MODULE
LEM	LDW 280-53476	LEM-6 (36)	1
LEM	LDW 280-53476	LEM-5 (35)	1
LEM	LDW 280-53476	LEM-4 (34)	1
LEM	LDW 280-53476	LEM-3 (33)	1

PART NO. LDW 280-11204-21 GRUMMAN SCH INFO 32-2.

MODEL	NEXT ASSY	MODULE NO.	REQ D PER MODULE
LEM	LDW 280-28476	LEM-2 (32)	1
LEM	LDW 280-28476	LEM-1 (31)	1
LEM	LDW 280-28476	LTA-8 (18)	1

PART NO. LDW 280-11204-17 GRUMMAN SCH INFO 32-2

MODEL	NEXT ASSY	MODULE NO.	REQ D PER MODULE
LEM	LDW 280-53476	LEM-6 (36)	1
LEM	LDW 280-53476	LEM-5 (35)	1
LEM	LDW 280-53476	LEM-4 (34)	1
LEM	LDW 280-53476	LEM-3 (33)	1
LEM	LDW 280-28476	LEM-2 (32)	1
LEM	LDW 280-28476	LEM-1 (31)	1
LEM	LDW 280-28476	LTA-8 (18)	1

PART NO. LDW 280-11204-11, -13, -15 GRUMMAN SCH INFO 32-2

QTY REQ D PER ASSY			PART OR IDENTIFYING NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE
			LDW 280-11204-21	E		Doubler	Al Alloy Sh	QQ-A-283	7075-T6	.020 × 7/8 × 8	None	88		
			LDW 280-11204-19	↑		Plate	Al Alloy Sh	QQ-A-283	7075-T6	.040 × 1 1/2 × 2	None	88		
			LDW 280-11204-17			Doubler	Al Alloy Sh	QQ-A-283	7075-T6	.020 × 7/8 × 8 1/4	None	88		
			LDW 280-11204-15			Doubler	Al Alloy Sh	QQ-A-283	7075-T6	.020 × 7/8 × 9	None	88		
			LDW 280-11204-13	↓		Doubler	Al Alloy Sh	QQ-A-283	7075-T6	.020 × 7/8 × 9	None	88		
			LDW 280-11204-11	E		Doubler	Al Alloy Sh	QQ-A-283	7075-T6	.020 × 7/8 × 9 1/8	None	88		

3

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
± 1/32 ± .020 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

GRUMMAN REL INFO
PRIM. NO. 48001
2.5 NP12 SR.5.16

DRAWN BY	Rockklein	5-3
CHECKED BY		
LAYOUT BY	Rockklein	5-3
Group Ldr	W. Lillmore	
Veh. Des. Int.	W. R. Buschner	5/13
Structures		5/13
Structures		5/14
Weights		5-17
Reliability		
Project Eng'r		5-18
Release		5-21

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

Doubler - Ascent Stage, Mid Sect, Shield Support, X253.5 Deck

CONTRACT NO. NAS 9-1100 DOCUMENTATION TYPE II

CODE IDENT NO. 26512 SIZE F 30 X 40 LDW 280-11204

SCALE Line Item = 1 SHEET 1 of 1

C

ENG 32.1 REV 3-65

FITH

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER *

DWG. NO. LDW 280-11204
EO NO. B1
CONTROL INFO NO. LDW 280 A-6962

FOR -15:

RESTRICT EFFECTIVITY TO LTA-8(18), LM-1 (31) & LM-2 (32)
(QUANTITY UNCHANGED)
(WAS LTA-8(18), LM-1(31) THRU LM-15(45))

DETAIL SPEC REQ	☐	CL II ENGRG CHG	✓	CL I ENGRG CHG	☐	LCD #1214

5

REASON FOR EO: INCREASED FITH LOADS

DESCRIPTION OF EO:
FOR -15:
RESTRICT EFFECTIVITY TO LTA-8(18), LM-1(31) & LM-2(32)
WAS LTA-8, LM-1 THRU LM-15.

GAEC EO RELEASE: C JK 5/20/67

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY						
✓			✓	DATE	5/17/67			5/18/67	5/19/67	5/19/67
				5	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	PROJ ENGRG

MODEL	~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	~~SUB CONTR UNIT NO.~~
LM	LM-3(33) THRU LM-15(45)		

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	DOUBLER - ASCENT STAGE, MID SECTION, SHIELD SUPPORT, X253.5 DECK	LDW 280-11204	B1

ISSUED BY Geo. W. Rocklein x7033 5/17/67 SECTION Veh Des Int. GROUP NO. 335 PL 25

01

NAS 9-1100

ENG 32.1 REV 3-65

FITH C

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO.	LDW 280-11204	EO NO.	B2
CONTROL INFO NO.	LDW 280A- 7218		

N/A LDW280-53476
LM-3(33) THRU LM-15(45)

REMOVE -21 REQUIREMENTS

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	✓	LCD# 1244

5

REASON FOR EO: INCREASED FITH LOADS

DESCRIPTION OF EO: DELETED -21

Ⓡ GAEC EO RELEASE: C — JK 6/6/7

MODEL	EFFECTIVITY		
	~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	~~SUB CONTR UNIT NO.~~
LM	LM-3(33)	THRU LM-15	(45)

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓			-21
REVISE DWG	RECORD EO	REWORK	SCRAP

APPROVED BY				F.N.K	JV		Jam	
DATE	4/25/67			5/25/67	5/26		5/26/67	6/6/67
5	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	DOUBLER - ASCENT STAGE, MID SECTION. SHIELD SUPPORT, X253.5 DECK	LDW 280-11204	B2

ISSUED BY Geo. W. Rocklein x 7033 5/25/67 SECTION Veh. Des. Int. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11205

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28491	LM-2(32)	1
LM	LDW280-28491	LM-1(31)	1
LM	LDW280-28491	LTA 8(19)	1
PART NO. LDW280-11205-11,-12,-13,-14		GAEC SCH NO.	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO			
		PRIM NO.			
LAST DASH NO. USED	-14	2 5			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ± .010 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	S.BRASWELL		
LAYOUT BY	S.BRASWELL		
CHECKED BY	C.B.A		
GRP. LEADER	J.PUSATERI 5-18-66		
VEH.DES.INT.	W.BISCHOFF 5-18-66		
STRUCTURES	FEB BW 5-20-66	PROJ ENGR	J.ALBER 5-23-66
STRUCTURES	HILDERMAN 5-20-66	REL GROUP	BOTTI 5-31-66
WEIGHTS	ROBESCH 5-23-66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT
ASCENT STAGE~CABIN~EQUIP LINES

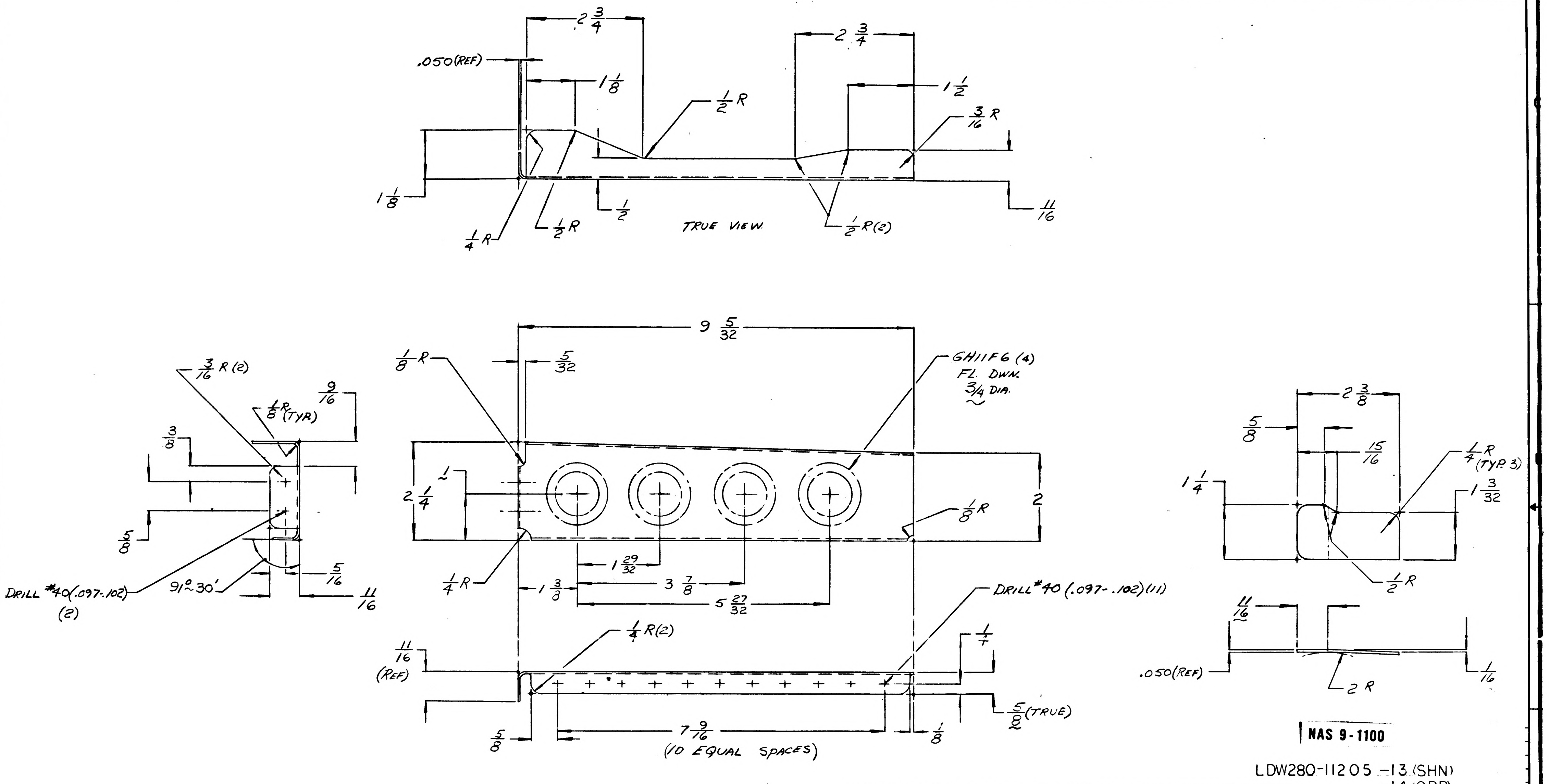
SIZE B
CODE IDENT NO. 26512
LDW280-11205
SCALE NONE
SHEET 1.00 OF 4

ENG 77.1 12-65

01 NAS 9-1100

MANUFACTURING OPERATIONS	
NOTES CHECKED ✓ APPLY TO THIS DWG.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES EXCEPT AS NOTED.	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 EXCEPT AS NOTED.	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 EXCEPT AS NOTED.	
250 FOR ALL DRILLED HOLES UNLESS OTHERWISE SPECIFIED.	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS ~~HEREWITH MARKED~~ ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ✓ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓

REVISION LETTER	ITEM NO.	ZONE	AUTHORITY FOR REVISION: GRUMMAN INFO ONLY / DCRF OR ECP	CLASS II	CLASS I	DET SPEC REQ	ENGRG ORDER	DESCRIPTION	REVISED BY AND DATE	EFFECTIVE ON MODULE NUMBER	DISPOSITION OF EXIST PARTS: RE-WORK	SCRAP	ENGRG APPD	GOVT APPD



.050(REF)
$2\frac{3}{4}$
$1\frac{1}{8}$
$\frac{1}{2}R$
$2\frac{3}{4}$
$1\frac{1}{2}$
$\frac{3}{16}R$
$1\frac{1}{8}$
$\frac{1}{4}R$
$\frac{1}{2}R$
$\frac{1}{2}$
TRUE VIEW
$\frac{1}{2}R(2)$
$\frac{11}{16}$
$9\frac{5}{32}$
$\frac{1}{8}R$
$\frac{5}{32}$
GH11F6 (4) FL. DWN. 3/4 DIA.
$\frac{3}{16}R(2)$
$\frac{1}{8}R(TYP)$
$\frac{9}{16}$
$\frac{3}{8}$
$2\frac{1}{4}$
$\frac{1}{2}$
2
$\frac{1}{8}R$
$\frac{5}{8}$
$1\frac{29}{32}$
$3\frac{7}{8}$
$5\frac{27}{32}$
$1\frac{3}{8}$
$\frac{1}{4}R$
DRILL #40(.097-.102) (2)
91°30'
$\frac{5}{16}$
$\frac{11}{16}$
DRILL #40 (.097-.102)(11)
$\frac{1}{4}R(2)$
$\frac{11}{16}$ (REF)
$\frac{1}{4}$
$\frac{5}{8}$(TRUE)
$\frac{5}{8}$
$7\frac{9}{16}$ (10 EQUAL SPACES)
$\frac{1}{8}$
$2\frac{3}{8}$
$\frac{5}{8}$
$\frac{15}{16}$
$\frac{1}{4}R$ (TYP. 3)
$1\frac{1}{4}$
$1\frac{3}{32}$
$\frac{1}{2}R$
$\frac{11}{16}$
.050(REF)
2 R
$\frac{1}{16}$

NAS 9-1100

LDW280-11205 -13 (SHN)
-14 (OPP)

LDW280-11205 -11 (SHN)
-12 (OPP)

PARTS TO BE REDRAWN ON PRODUCTION FORMAT

NO.	FINISHES	GRUMMAN STD SPEC	MILITARY SPEC NO.
2	CADMIUM PLATE	G. S. S.	
10	ZINC CHROMATE PRIMER	G. S. S.	
15	TINTED PRIMER: 1 COAT	G. S. S.	
76	ALODINE	G. S. S.	
88	ANODIZE	~~G. S. S.~~ LSP 14-9030	

SYM	PROCESSES	GRUMMAN STD SPEC	MILITARY SPEC NO.
T6	AL HEAT TREAT		MIL-H-6088
	MAGNAFLUX		MIL-I-6868
	PENETRANT INSPECTION (ZYGLO)		MIL-I-6866
	THREADING		MIL-S-7742
	STEEL HEAT TREAT PSI ROCKWELL C TO C		

ENG. 003 9-63

QTY REQ'D PER ASSY			PART OR IDENTIFYING NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE (EA)	PROCESS SYMBOL	FINISH NO.	UNIT WT	ZONE
			LDW280-11205-14	E		SPLICE PLATE	AL-ALLOY	QQ-A-283	7075 SHT	.050 x 1 1/2 x 2 3/4	T6	88		
			-13	E		SPLICE PLATE	AL-ALLOY	QQ-A-283	7075 SHT	.050 x 1 1/2 x 2 3/4	T6	88		
			-12	E		SUPPORT	AL-ALLOY	QQ-A-283	7075 SHT	.050 x 5 x 10 3/4	T6	88		
			LDW280-11205-11	E		SUPPORT	AL-ALLOY	QQ-A-283	7075 SHT	.050 x 5 x 10 3/4	T6	88		

5

MODEL	NEXT ASSY	MODULE NO.	REQ'D PER MODULE
LEM	LDW280-28491	LEM-2(32)	1
LEM	LDW280-28491	LEM-1(31)	1
LEM	LDW280-28491	LTA-8(18)	1

PART NO LDW280-11205-11,-12,-13,-14 GRUMMAN SCH INFO 31-3

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
± 1/32 ± .010 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE
GRUMMAN REL INFO
PRIM. NO. LE(001) 215 MV17

DRAWN BY	S. BRASWELL	
CHECKED BY		
LAYOUT BY	S. BRASWELL	
GRP LEADER	J. Pusatera	5/18
VDI		
STRUCT		5/20
STRUCT		5/20
WT S.	A. Rabach	5-23
RELIAB		
RELEASE	Butts	5-31-66
PROJ ENG.		5-23

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

SUPPORT
ASCENT STAGE~CABIN~EQUIP LINES
CONTRACT NO. NAS 9-1100 DOCUMENTATION TYPE II
CODE IDENT NO. 26512 SIZE F 30 X 40 LDW280-11205
SCALE FULL LINE ITEM # 1 SHEET

REVISIONS

FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
									RETRACED NO CHG. LAST REV NO CHG ADDED SH 1.10, 2.00, 3.00 OCT. 18, 1966 T. FREDA RR	NOTED.	NOT	REQD			

CHG APPROVED

LTR	GROUP LDR									

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11205
SCALE NONE		SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11205 -14	E	SPLICE PLATE	AL ALLOY SH	QQ-A-250/12	7075	.050 X 2 X 3	T6	88	
		-13	E	SPLICE PLATE	AL ALLOY SH	QQ-A-250/12	7075	.050 X 2 X 3	T6	88	
		-12	E	SUPPORT	AL ALLOY SH	QQ-A-250/12	7075	.050 X 3 X 10	T6	88	
		LDW280-11205 -11	E	SUPPORT	AL ALLOY SH	QQ-A-250/12	7075	.050 X 3 X 10	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	AL HEAT TREAT	MIL-H-6088
88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B

CODE IDENT NO. 26512

LDW280-11205

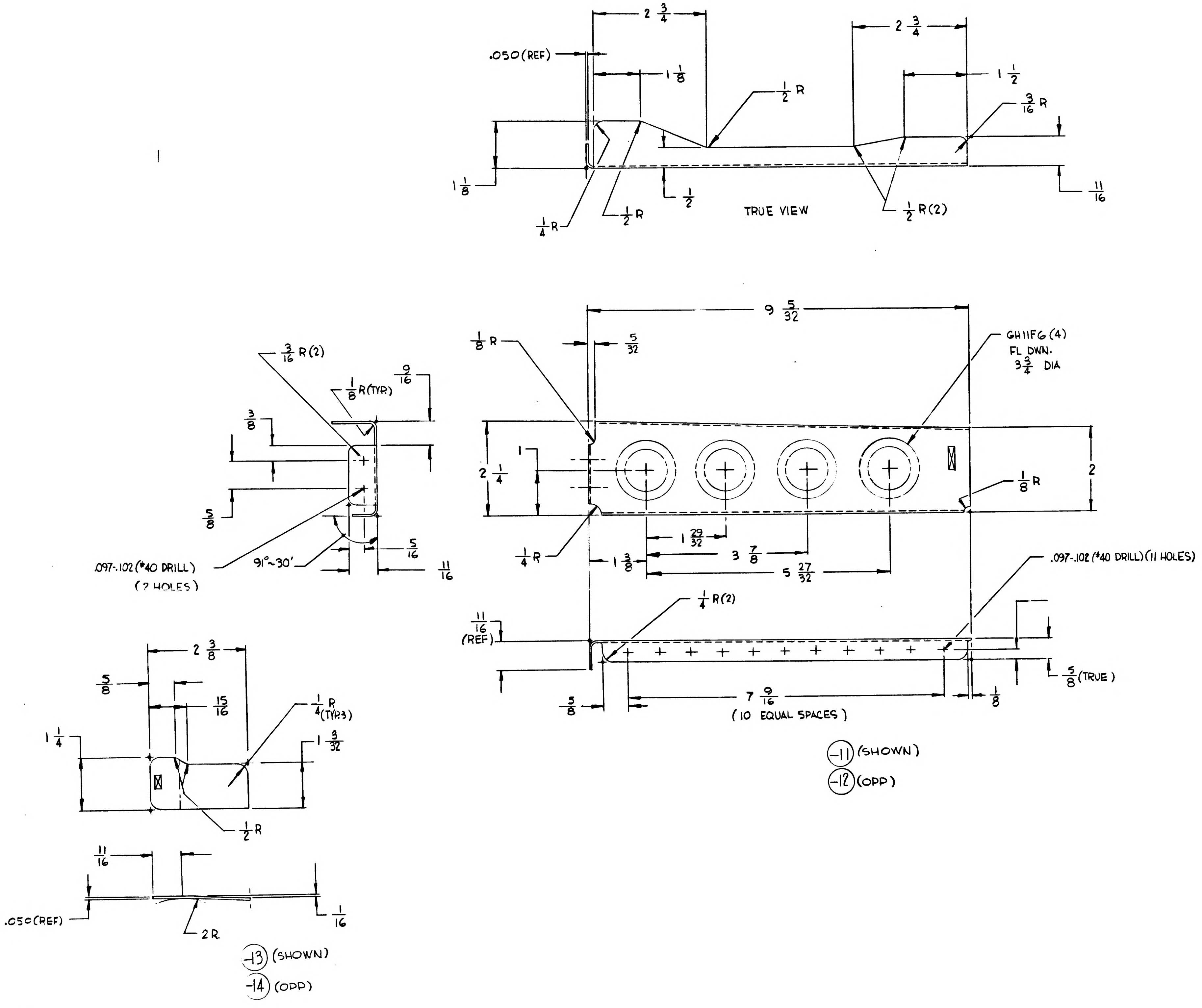
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



.050 (REF)
2 3/4
1 1/8
1/2 R
2 3/4
1 1/2
3/16 R
1 1/8
1/2
11/16
1/4 R
1/2 R
TRUE VIEW
1/2 R (2)
9 5/32
1/8 R
5/32
GH11F6 (4)
FL DWN.
3 3/4 DIA
3/16 R (2)
1/8 R (TYP)
9/16
3/8
1
2 1/4
2
1/8 R
5/8
.097-.102 (#40 DRILL)
(2 HOLES)
91°-30'
5/16
11/16
1/4 R
1 29/32
1 3/8
3 7/8
5 27/32
.097-.102 (#40 DRILL) (11 HOLES)
1/4 R (2)
11/16 (REF)
5/8 (TRUE)
5/8
7 9/16
(10 EQUAL SPACES)
1/8
-11 (SHOWN)
-12 (OPP)
2 3/8
5/8
15/16
1/4 R (TYP 3)
1 1/4
1 3/32
1/2 R
11/16
.050 (REF)
2 R.
1/16
-13 (SHOWN)
-14 (OPP)

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
$\sqrt{125}$ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD-10	
$\sqrt{200}$ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ✓ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LM	F	26512	LDW280-11205
SCALE FULL			SHEET 3.00

LDW280-11205

LDW280-11205

ENG 735 6-64

01

NAS 9-1100

Ⓐ

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

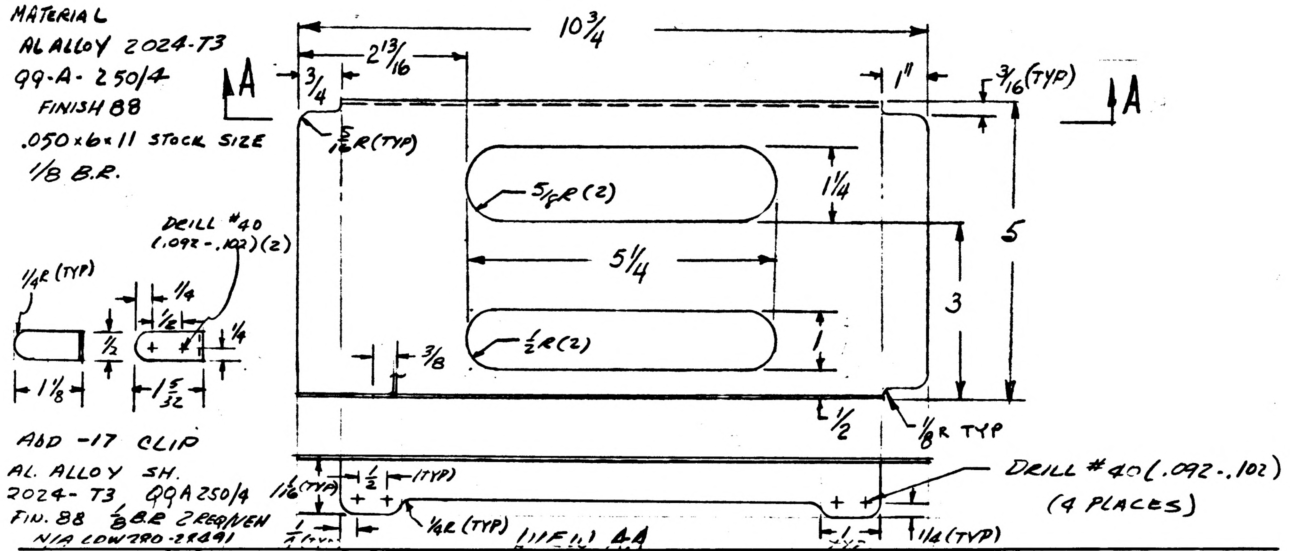
ENGINEERING ORDER

DWG. NO. LDW280-11205	EO NO. A1
CONTROL INFO NO. LDW280A4616	1

ADD -15 SUPPORT 1 REQD LM 1, LM 2, N/A LDW280-28491

MATERIAL
AL ALLOY 2024-T3
QQ-A-250/4
FINISH 88
.050 x 6 x 11 STOCK SIZE
1/8 B.R.

ADD -17 CLIP
AL. ALLOY SH.
2024-T3, QQA250/4
FIN. 88 1/8 B.R. 2 REQ/VEN
N/A LDW280-28491



A
A
10 3/4
2 13/16
3/4
1"
3/16 (TYP)
1/8 R (TYP)
5/8 R (2)
1 1/4
5
5 1/4
3
1/2 R (2)
1
3/8
1/2
1/8 R TYP
DRILL #40 (.092-.102) (2)
1/4 R (TYP)
1/4
1/2
1/4
1 1/8
1 5/32
1/16 (TYP)
1/2
(TYP)
1/4 R (TYP)
DRILL #40 (.092-.102) (4 PLACES)
1/4 (TYP)
1/16 (TYP)
VIEW A-A

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		(3)

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
RELOCATION OF DISCONNECT WIRE SUPT. BRACKETS.	ON LM 1 & LM 2 ADDED -15 & -17	1/6/7

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM 1 (31) LM2 (32)	

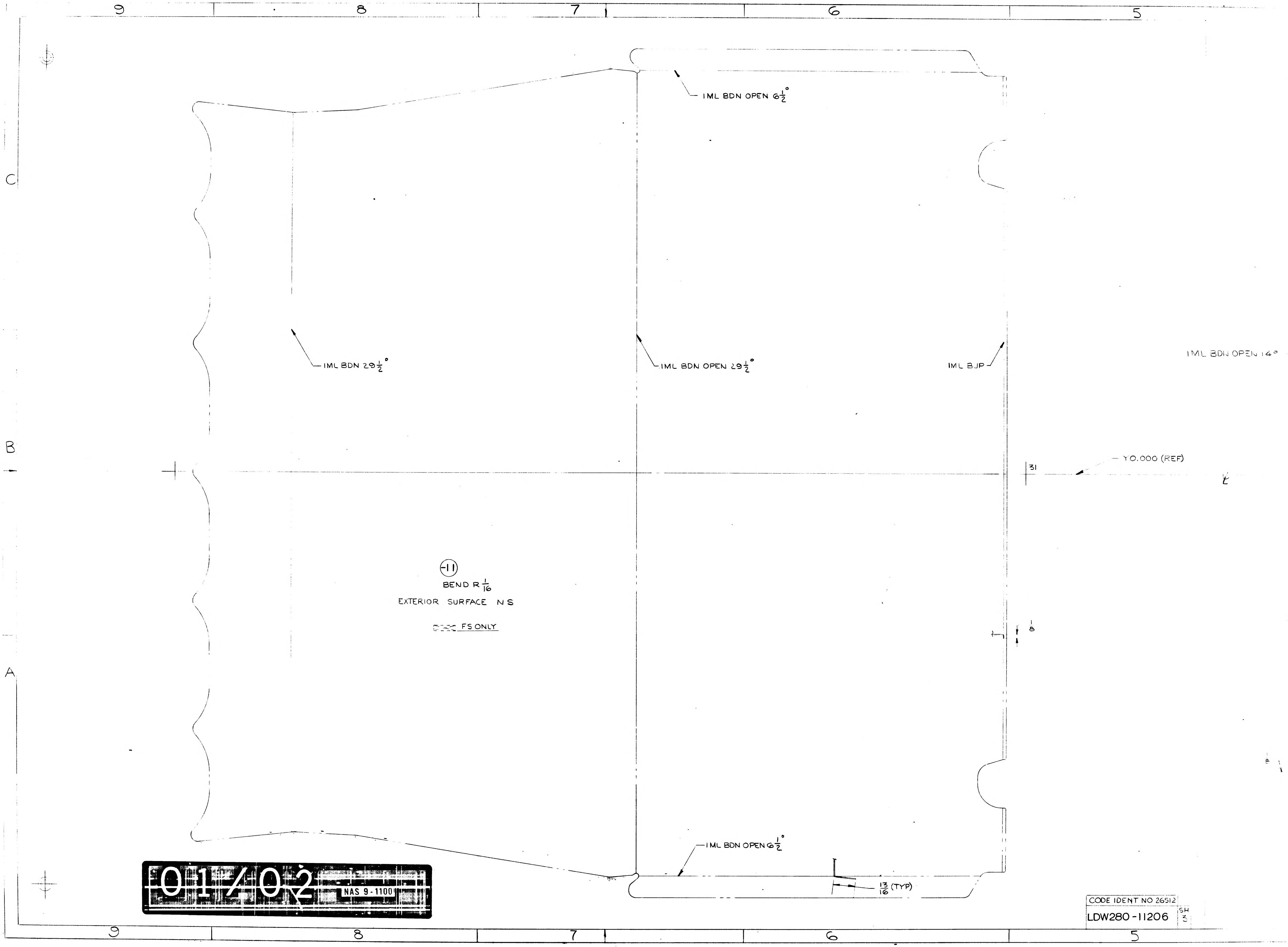
DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
✓		NOT REQD		DATE	1/3/67			12-30-66	1-5-67		1-5-67	1-5-67
REVISE DWG	RECORD EO	REWORK	SCRAP	1a	V.D.I	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SUPPORT - A/S - CABIN EQUIP. LINES	LDW280-11205	A1

ISSUED BY P. ABRAMS X1441 12/27/66 SECTION VDI-CABIN GROUP NO. 335 PL 35

01

NAS 9-1100


9
8
7
6
5
C
B
A
IML BDN OPEN $6\frac{1}{2}$°
IML BDN $29\frac{1}{2}$°
IML BDN OPEN $29\frac{1}{2}$°
IML BJP
IML BDN OPEN 14°
Y0.000 (REF)
31
℄
(-11)
BEND R $\frac{1}{16}$
EXTERIOR SURFACE N S
FS ONLY
$\frac{1}{8}$
IML BDN OPEN $6\frac{1}{2}$°
$\frac{13}{16}$ (TYP)

01/02 NAS 9-1100

CODE IDENT NO 26512
LDW280-11206 SH 3

LDW280-11206

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-51184	LEM-1(31)	1
PART NO. LDW280-11206-17		GAEC SCH NO. 30 SH-1	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-51396	LEM-1(31)	1 EA
PART NO. LDW280-11206-11, -13, -14, -15 & -16		GAEC SCH NO. 30 SH-1	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-17

GRUMMAN REF INFO

PRIM NO.	VE001		
215	MP-8	-29-6	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100
LINE ITEM 1
DOCUMENTATION TYPE II

DRAWN BY	D PALMER 8-23-66	THERMO	AB FOR TK 9/17/66
LAYOUT BY	SHANLEY		
CHECKED BY	R.SMITH 8-26-66		
GR. LEADER	J. Pusateri 8/26/66		
VEH DES INT	8/27		
STRUCTURES	8/27	PROJ ENGR	8-27
STRUCTURES	Alderman 8/27	REL GROUP	9-20-66
WEIGHTS	9-12		

®
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SHIELD
ASCENT STAGE - CABIN - STAR TRACKER - IMU BEAM - THERMAL

SIZE	CODE IDENT NO.	
B	26512	LDW280-11206
SCALE	NONE	SHEET 1.00 OF 3

CDR 8-27-66

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11206-17	E	ZEE	SEE NOTE 2	SEE NOTE 2	SEE NOTE 2	.020 X 3 3/8 × 27 1/4	NONE	NOTE 3	
		-16	↕	CLIP	AL ALLOY SH	QQ-A-250/4	2024	.040 × 2 1/4 × 2 1/2	T42	88	
		-15	↕	↕	↕	↕	↕	.040 × 2 1/4 × 2 1/2	↕	↕	
		-14	↕	↕	↕	↕	↕	.040 × 2 7/8 × 3	↕	↕	
		-13	↕	CLIP	AL ALLOY SH	QQ-A-250/4	2024	.040 × 2 7/8 × 3	T42	88	
		LDW280-11206-11	E	SHIELD	SEE NOTE 2	SEE NOTE 2	SEE NOTE 2	.020 X 30 1/2 × 31 1/2	NONE	NOTE 3	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030
						T42	AL HEAT TREAT	MIL-H-6088
						76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

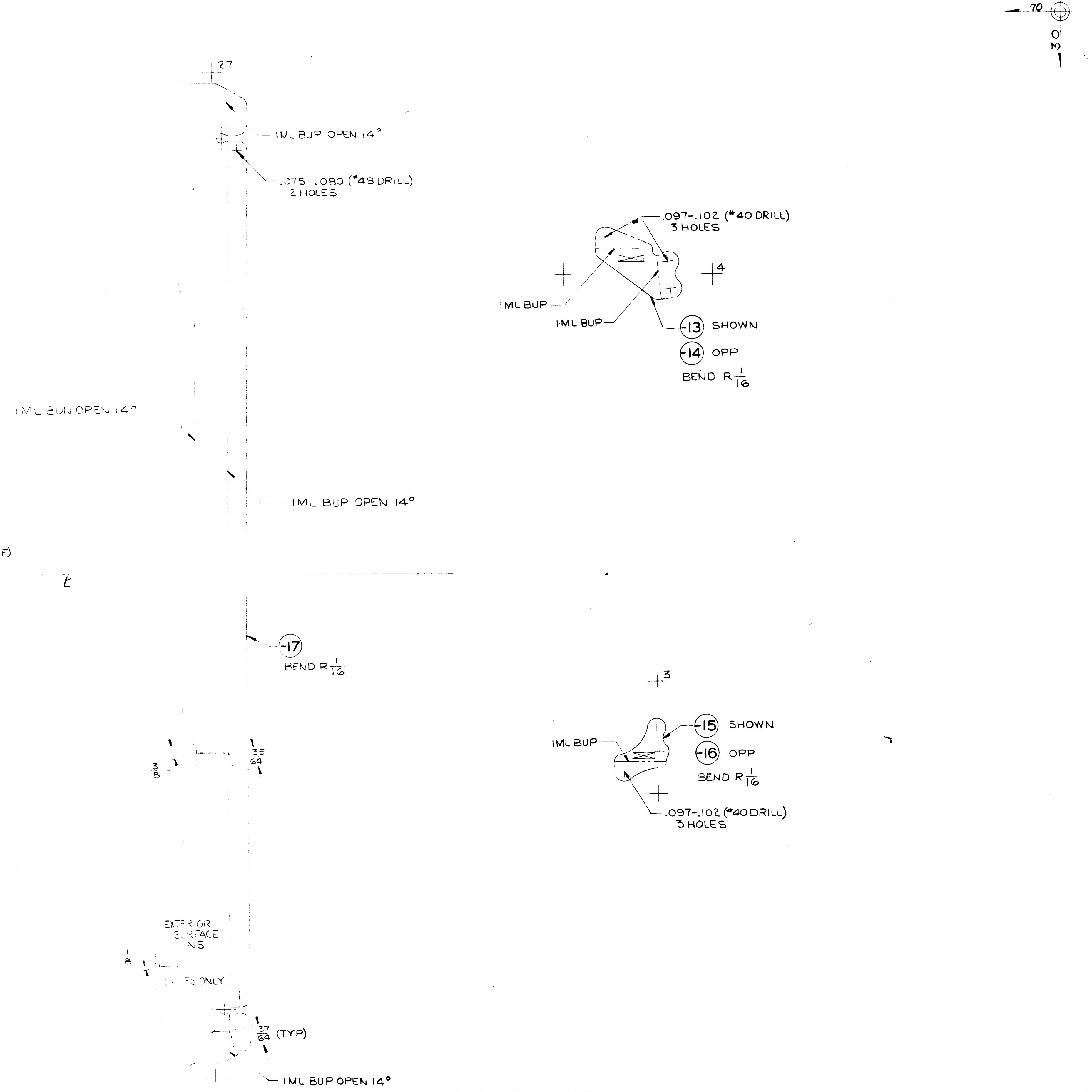
SIZE B
CODE IDENT NO. 26512
LDW280-11206

SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100


70
O
3
27
IML BUP OPEN 14°
.075-.080 (#48 DRILL)
2 HOLES
.097-.102 (#40 DRILL)
3 HOLES
4
IML BUP
IML BUP
-13 SHOWN
-14 OPP
BEND R 1/16
IML BDN OPEN 14°
IML BUP OPEN 14°
0.000 (REF)
-17
BEND R 1/16
3
IML BUP
-15 SHOWN
-16 OPP
BEND R 1/16
.097-.102 (#40 DRILL)
3 HOLES
3/8
35/64
EXTERIOR
SURFACE
S
1/8
FS ONLY
37/64 (TYP)
IML BUP OPEN 14°

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. MAKE LDW280-11206-11&-17 FROM AL ALLOY CLAD SH (SKIN QUALITY) 2024-T3 QQ-A-250/5. SURFACE DESIGNATED "EXTERIOR" TO BE PRE-FINISHED WITH ALUMALITE 200/RI/EB10, AND PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CAROLL PRODUCTS INC, FARMINGDALE, L I, NY.
3. INTERIOR SURFACE OF -11&-17 TO BE FINISH #76 (LSP14-9010).
4. REMOVE FINISH ALUMALITE 200/RI/EB10 (ANODIZE) FROM INTERIOR SURFACE OF -11&-17 & FINISH AS NOTED.
5. MATERIAL FOR -11&-17 TO BE HAND SELECTED THICKNESS TO BE .020±.002

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 34 X 86

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X) = 2.22 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = .55 SQ. FT.

PRINT TRIM LINE

LDW280-11206

LDW280-11206

02/02 NAS 9-1100

DE IDENT NO 26512
W280-11206 SH 3

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

LEM	SIZE	CODE IDENT NO.	
MODEL OR END ITEM	J	26512	LDW280-11206
	SCALE FULL		SHEET 3.00

FOR PHOTO REPRODUCTION

K2

LDW280-11207 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-28493	LTA-8(18)	1
PART NO. LDW280-11207-1		GAEC SCH NO. 32-2	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A

LAST SECT LTR USED

LAST DASH NO. USED -1

GRUMMAN REL INFO A

PRIM NO. 215 | (E(001) | MP-14 | A-12-1-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES
±1/2° ±.020 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY	J.CARROLL 5/18
LAYOUT BY	
CHECKED BY	
GR. LDR	W.TRAUT 5/18
VEH DES INT	W.BISCHOFF 5/18
STRUCTURE	FEB 5/19
STRUCTURE	JV 5/19
WEIGHTS	D.ROBESCH 5/20
PROJ ENGR	J.ALBER/RMC 5/22
REL GROUP	BOTTI 5/31

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET ASSY
ASCENT STAGE - MID SECT
GLYCOL VALVE - R.H. TRUSS

SIZE B | CODE IDENT NO. 26512 | LDW280-11207 | A

SCALE NONE | SHEET 100 OF 4

NG 77.1 12-65

▲THIS DWG SUPERSEDES LDW280-11207 NO CHG 5/31/66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
									RETRACED NO CHG LAST REVISION NO CHG. ADDED SH. 1.10, 2.00, 3.00.	JAEGGI	10-31-	66			
A	1	1.00, 1.10, 3.00							ON-15, 1/8 R(2) WAS 1/4 R(2). DWG CORRECTION ONLY	LTA-8	NOT	REQD	JAEGGI 10/31/66 MULLEN 6B	11/11/66	

FOR CONTINUATION OF REVISIONS SEE SHEET ______

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11207	A
SCALE NONE		SHEET 1.10	

ENG 77.3 5-65

01 NAS 9-1100

QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NC.	ZONE
		MS20426AD3	E	RIVET	STD PART						
2		NAS697A08	E	PLATE, NUT	STD PART						
2		LDW280-11207-15	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040x5x5	88	NONE	
2		LDW280-11207-13	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.032x3x6	88	NONE	
1		LDW280-11207-11	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.040x6x7	88	NONE	
		LDW280-11207-1	E	BRACKET ASSY					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B

CODE IDENT NO. 26512

LDW280-11207

A

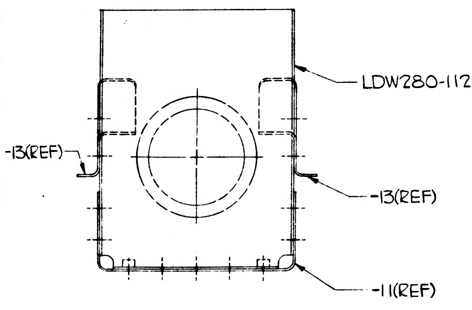
SCALE NONE

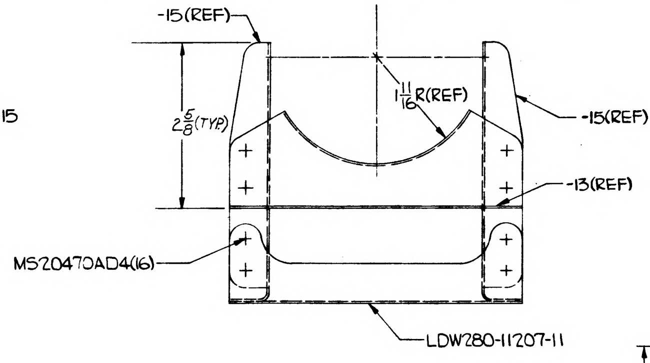
SHEET 2.00

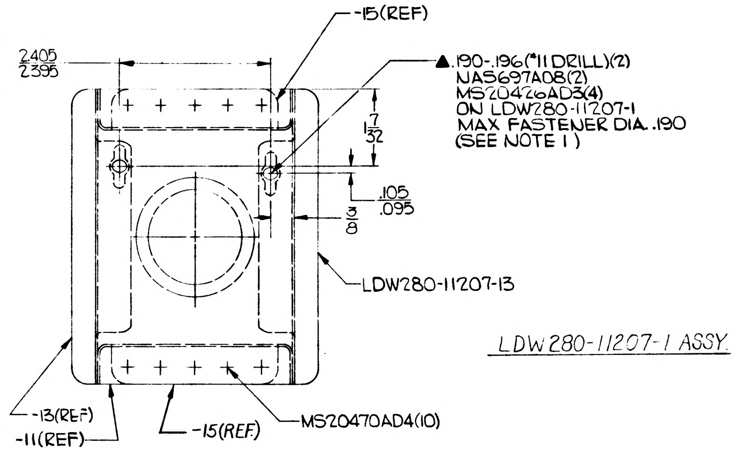
ENG 77.2 7-65

01

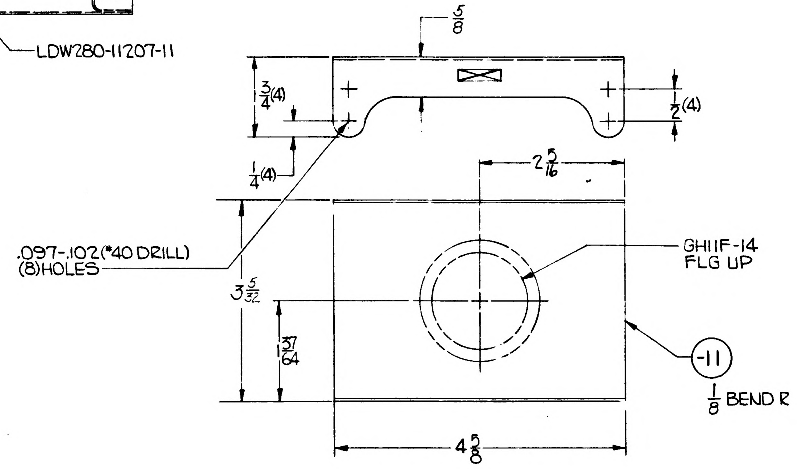
NAS 9-1100


LDW280-11207-15
-13(REF)
-13(REF)
-11(REF)


-15(REF)
$2\frac{5}{8}$(TYP)
$1\frac{11}{16}$R(REF)
-15(REF)
-13(REF)
MS20470AD4(16)
LDW280-11207-11

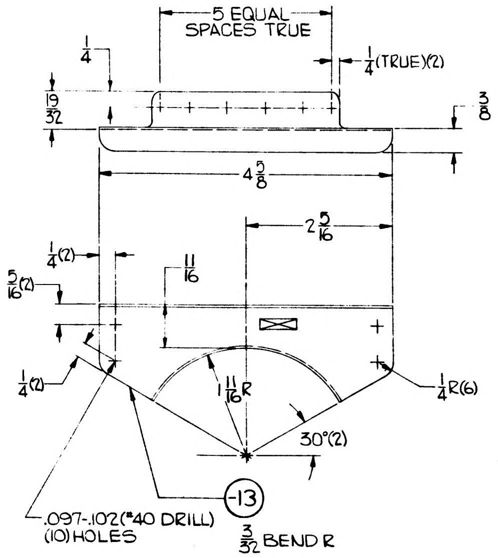

-15(REF)
▲.190-.196(#11 DRILL)(2)
NAS697A08(2)
MS20426AD3(4)
ON LDW280-11207-1
MAX FASTENER DIA. .190
(SEE NOTE 1)
$\frac{2.405}{2.395}$
$1\frac{7}{32}$
$\frac{.105}{.095}$
$\frac{3}{8}$
LDW280-11207-13
-13(REF)
-11(REF)
-15(REF)
MS20470AD4(10)

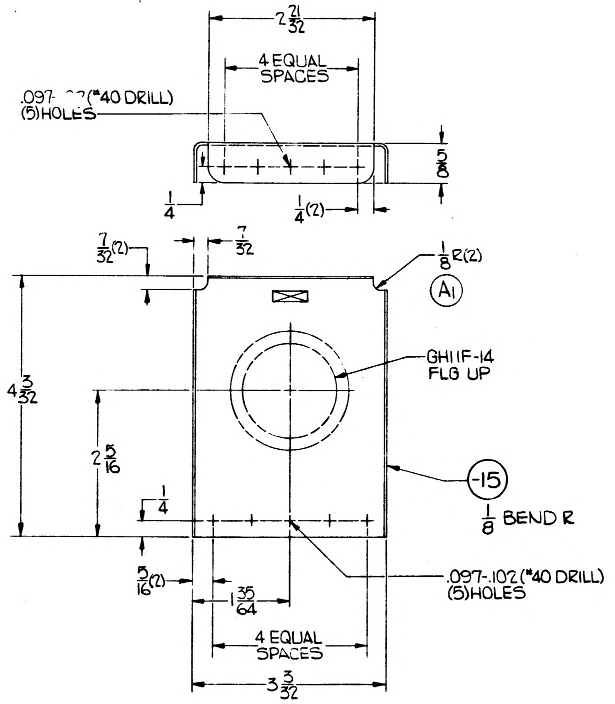
LDW280-11207-1 ASSY

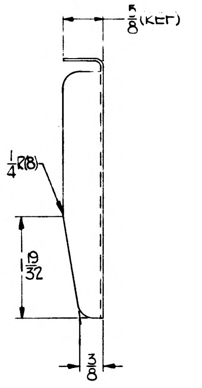

$\frac{5}{8}$
$\frac{3}{4}$(4)
$\frac{1}{2}$(4)
$\frac{1}{4}$(4)
.097-.102(#40 DRILL)
(8)HOLES
$2\frac{5}{16}$
GH11F-14
FLG UP
$3\frac{5}{32}$
$1\frac{37}{64}$
-11
$\frac{1}{8}$ BEND R
$4\frac{5}{8}$

NOTES:
1. FOR HOLES MARKED ▲ SEE DRAWING LSC310-403-090 FOR CORRESPONDING HOLE PATTERNS.
2. INSTALL FASTENERS PER LSP14-15302.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	


5 EQUAL
SPACES TRUE
$\frac{1}{4}$
$\frac{1}{4}$(TRUE)(2)
$\frac{19}{32}$
$\frac{3}{8}$
$4\frac{5}{8}$
$2\frac{5}{16}$
$\frac{1}{4}$(2)
$\frac{11}{16}$
$\frac{5}{16}$(2)
$\frac{1}{4}$(2)
$1\frac{11}{16}$R
$\frac{1}{4}$R(6)
30°(2)
-13
.097-.102(#40 DRILL)
(10) HOLES
$\frac{3}{32}$ BEND R


$2\frac{21}{32}$
4 EQUAL
SPACES
.097-.102(#40 DRILL)
(5)HOLES
$\frac{5}{8}$
$\frac{1}{4}$
$\frac{1}{4}$(2)
$\frac{7}{32}$(2)
$\frac{7}{32}$
$\frac{1}{8}$R(2)
A1
GH11F-14
FLG UP
$4\frac{3}{32}$
$2\frac{5}{16}$
$\frac{1}{4}$
-15
$\frac{1}{8}$ BEND R
$\frac{5}{16}$(2)
$1\frac{35}{64}$
.097-.102(#40 DRILL)
(5)HOLES
4 EQUAL
SPACES
$3\frac{3}{32}$


$\frac{5}{8}$(REF)
$\frac{1}{4}$R(8)
$1\frac{19}{32}$
$\frac{3}{8}$

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
LM	SIZE F	CODE IDENT NO. 26512	LDW280-11207	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

ENG 735 6-64

01 NAS 9-1100

LDW280-11208 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53078	LEM-15(45)	1
		LEM-14(44)	1
		LEM-13(43)	1
		LEM-12(42)	1
		LEM-11(41)	1
		LEM-10(40)	1
		LEM-9(39)	1
		LEM-8(38)	1
		LEM-7(37)	1
		LEM-6(36)	1
		LEM-5(35)	1
		LEM-4(34)	1
LEM	LDW280-53078	LEM3(33)	1
PART NO. LDW280-11208-11		GAEC SCH NO. 32-5	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00				
REV	A	A							
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO	
LAST DASH NO. USED	-11	PRIM NO. 215	VE(001) MP-A 9-23-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM 3
DOCUMENTATION TYPE II

DRAWN BY	GENTILE 5/20/66	RELIABILITY	—
LAYOUT BY	J. LEONARD		
CHECKED BY	5-24-66		
GR. LEADER	5/25/66		
VEH. DES. INT	5-26		
STRUCT.	5/26	PROJ ENGR	Plunkett 2 Jun
STRUCT.	Hildesman 5/26	REL GROUP	6 6 66
WEIGHTS			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HAT
ASCENT STAGE~MID. SECT.-AFT
TILTED ENGINE SUPPORT

SIZE	CODE IDENT NO.		
B	26512	LDW280-11208	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~GOVT~~ APPD
A	1	1,1.10						EO A1	ON SH #1 ADDED TO EFFECTIVITY OF -11 LEM-7(37) THRU LEM-15(45). SH 1 OF 4 WAS 1 OF 3 ADDED SH 1.10	LEM-7(37) THRU LEM-15(45)	NOT	REQD RL	G. WRIGHT 9-10-66		
	2	1,1.10							REF. EO A1, ON LEM-7 THRU LEM-15 NEXT ASS'Y SHOULD BE LDW 280-53078.	NOT REQ'D	NOT	REQD FZ	FOSTER 9-22-66	RMC	

CHG APPROVED	LTR	GROUP LDR	VEH.DES.INT	STRUCT	STRUCT	WEIGHTS	RELIABILITY				
	A										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11208	A
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

								LDW280-11208-11	E	HAT	AL ALLOY SH	QQ-A-250/12	7075	.071 x 8 x 8 5/8	T6	88	
QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11208

SCALE NONE SHEET 2 00

ENG 77.2 7-65

01

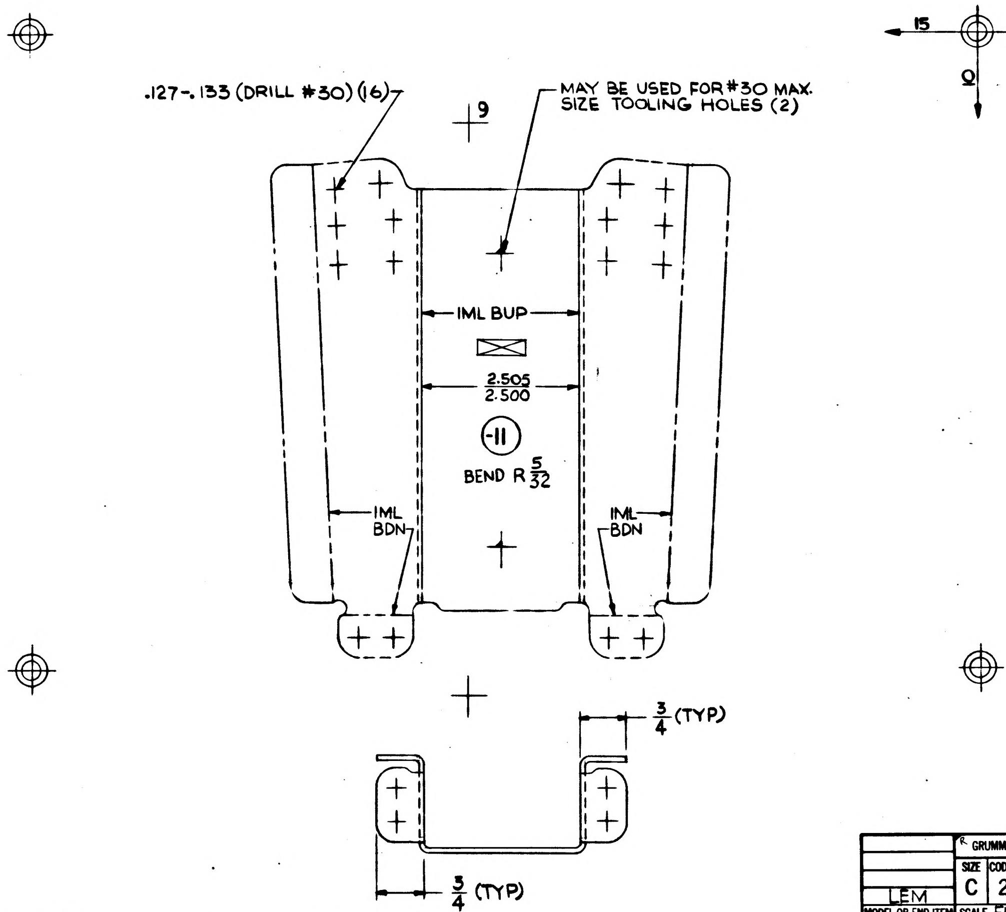
NAS 9-1100

TRAM 87

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS EXCEPT AS NOTED.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓APPLY TO THIS DWG	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY	✓
TOLERANCE ON LOFTED DELINEATION IS ± 1/32	✓

LDW280-11208


15
Q
.127-.133 (DRILL #30) (16)
9
MAY BE USED FOR #30 MAX. SIZE TOOLING HOLES (2)
IML BUP
2.505
2.500
-11
BEND R 5/32
IML BDN
IML BDN
3/4 (TYP)
3/4 (TYP)

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK		
LEM	SIZE C	CODE IDENT NO. 26512	LDW280-11208
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

FOR PHOTO REPRODUCTION

NAS 9-1100

LDW280-11209 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO.

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-53162	LM-15(45)	2
		THRU	
		LM-7(37)	2
	LDW280-53162	QUAL TEST(70)	2
	LDW280-53162	PA-1(47)	2
	LDW280-28162	QUAL TEST(70)	2
	LDW280-28162	LTA-8(18)	2
	LDW280-53162	LEM-6(36)	2
		LEM-5(35)	2
		LEM-4(34)	2
	LDW280-53162	LEM-3(33)	2
	LDW280-28162	LEM-2(32)	2
LEM	LDW280-28162	LEM-1(31)	2

PART NO. LDW280-11209-13

GAEC SCH NO. 30

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28162	QUAL TEST(70)	1
		LTA-8(18)	1
		LEM-2(32)	1
LEM	LDW280-28162	LEM-1(31)	1

PART NO. LDW280-11209-11

GAEC SCH NO. 30

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00						
REV	A	A								
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED B

LAST DASH NO. USED -13

GRUMMAN REL

GRUMMAN REL^C INFO A		
PRIM NO.	JK(001)	
215	ME-3A	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM 1

DOCUMENTATION TYPE II

DRAWN BY	HIPPLER 5-20-66	RELIABILITY	
LAYOUT BY	KORNELLY		
CHECKED BY	F 5-25-66		
GR. LEADER	6/1		
VEH DES INT	6/2		
STRUCTURE	6/2	PROJ ENGR	13 Jun 66
STRUCTURE	6/3	REL GROUP	C. Caramanico 6-16-66
WEIGHTS	6/12		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

GUSSET
ASCENT STAGE-MID SECT.-LOWER THERMAL SHIELD

SIZE B

CODE IDENT NO. 26512

LDW280-11209 A

SCALE NONE

SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00					✓	LEO280-365	ON-11 & -13 ADDED QUAL TEST. ADDED SH. 1.10	QUAL TEST (70)	NOT	REQD.	S. CARANO 10-22-68	BC 10-23-68	
	2	1.00					✓	E.O. A2	IN M/B FOR -13. REVISED N/A & ADDED LM-3 (33) THRU LM-15 (45) REQ'TS IN M/B FOR -11 REMOVED LM-3 (33) THRU LM-6 (36) REQTS.	LM-3(33) THRU LM-15(45)		-11			
	3	1.00					✓	LEO280-512 LCD-1124	ON-11 & -13 ADDED PA-1 (47) REQ'TS.	PA-1 (47)	NOT	REQD.			
	4	1.00					✓	E.O. A4 LCD-1124	REF CHG A3 LEO 280-512 ; REMOVED LDW280-11209-11			✓			
	5	1.00					✓	LEO280-738 LCD-2104 Ⓔ	FOR -13 ADDED QUAL TEST REQ'TS.	QUAL TEST (70)	NOT	REQ'D.			

CHG APPROVED							
LTR	GROUP LDR	VEH DES INT	STRUCT	STRUCT	WEIGHTS	RELIABILITY	
A							

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11209	A Ⓐ
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280 11209-13	E	GUSSET	AL ALLOY SH	QQ-A-250/12	7075-T6	.040X 2 X 3 1/4	NONE	76	
		LDW280-11209-11	E	GUSSET	AL ALLOY SH	QQ-A-250/12	7075-T6	.040X 2 1/4 X 3	NONE	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						76	ALODINE	LSP14.9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11209

SCALE NONE

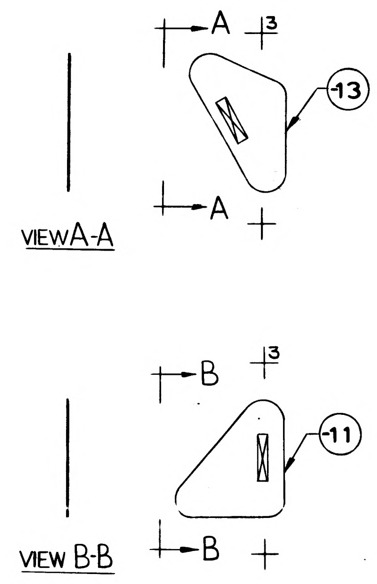
SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.



VIEW A-A

VIEW B-B

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~[illegible]~~ NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

MODEL OR END ITEM	SIZE	CODE IDENT NO.	
LEM	C	26512	LDW280-11209
	SCALE FULL		SHEET 300

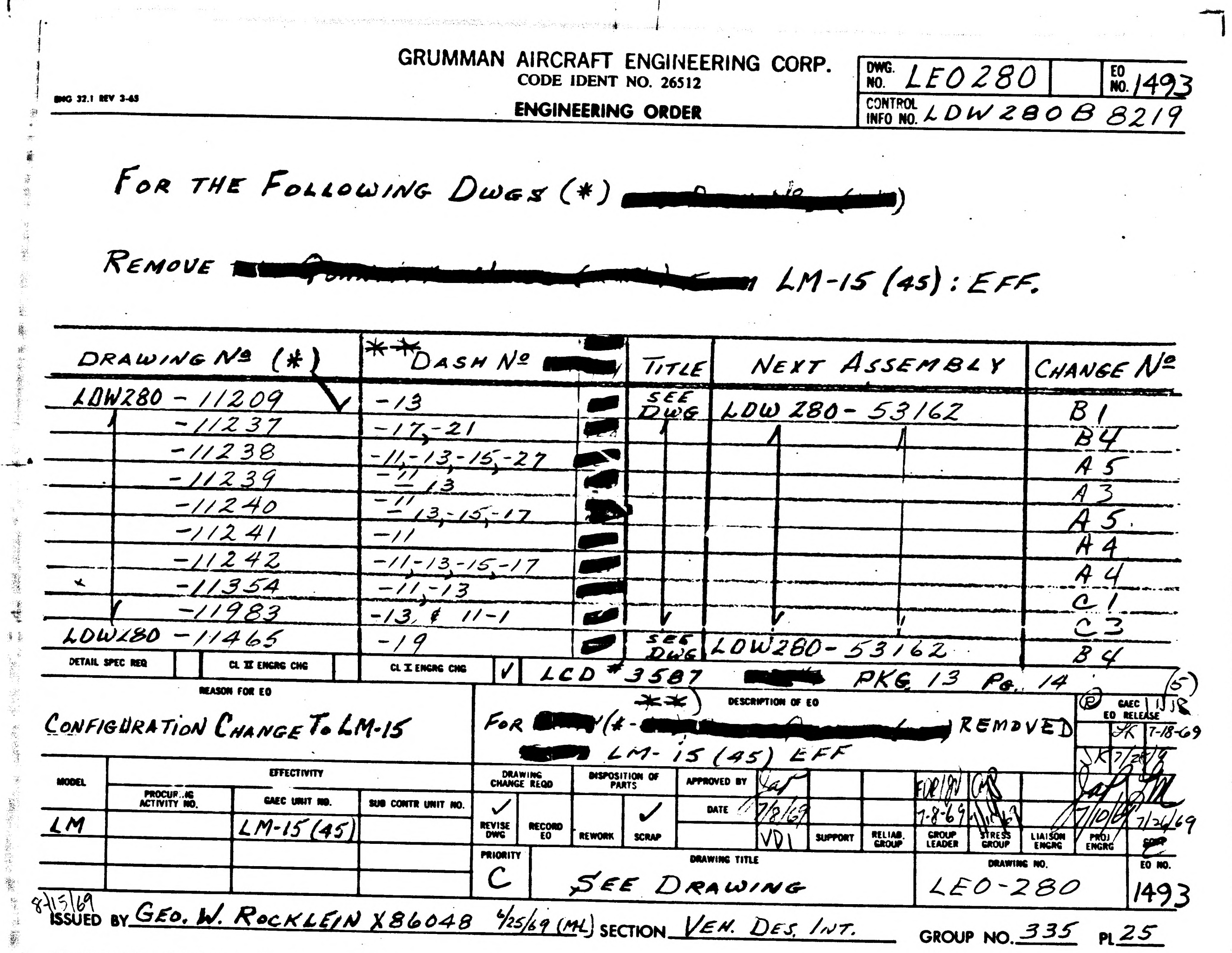
LDW280-11209

FOR PHOTO REPRODUCTION

K2

Q11

NAS 9-1100



ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280 | EO NO. 1493
CONTROL INFO NO. LDW280B 8219

FOR THE FOLLOWING DWGS (*) [redacted])

REMOVE [redacted] LM-15 (45) : EFF.

DRAWING № (*)	** DASH №	[redacted]	TITLE	NEXT ASSEMBLY	CHANGE №
LDW280 - 11209	-13	[redacted]	SEE DWG	LDW 280 - 53162	B 1
-11237	-17, -21	[redacted]			B 4
-11238	-11, -13, -15, -27	[redacted]			A 5
-11239	-11, 13	[redacted]			A 3
-11240	-11, 13, -15, -17	[redacted]			A 5
-11241	-11	[redacted]			A 4
-11242	-11, -13, -15, -17	[redacted]			A 4
-11354	-11, -13	[redacted]			C 1
-11983	-13, & 11-1	[redacted]			C 3
LDW280 - 11465	-19	[redacted]	SEE DWG	LDW280 - 53162	B 4

DETAIL SPEC REQ ☐ | CL II ENGRG CHG ☐ | CL I ENGRG CHG ✓ | LCD # 3587 [redacted] PKG 13 PG. 14 (5)

REASON FOR EO: CONFIGURATION CHANGE TO LM-15

DESCRIPTION OF EO: FOR [redacted] (** - [redacted]) REMOVED [redacted] LM- 15 (45) EFF

GAEC EO RELEASE: JK 7-18-69; JK 7/28/69

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK | SCRAP ✓

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	CONF
APPROVED BY				FOR				
DATE	7/8/69			7-8-69	7/1/69		7/10/69	7/26/69

PRIORITY: C | DRAWING TITLE: SEE DRAWING | DRAWING NO. LEO-280 | EO NO. 1493

8/15/69
ISSUED BY GEO. W. ROCKLEIN X86048 6/25/69 (ML) SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11210 A

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM95	LDW280-53159	PA-1 (47)	1
LM	LDW280-53159	LM-15(45)	1
		THRU	
LM	LDW280-53159	LM-3 (33)	1
PART NO. LDW280-11210-13		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53159	QUALTEST(70)	1
PART NO. LDW280-11210-11		GAEC SCH NO. 30	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	200	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -13

GRUMMAN REL INFO A

PRIM NO. 215 JK(001) ME-3A 12/1/ EHF

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	J Gardella 11/9/66	THERMO	11/11/66
LAYOUT BY	PFORSCH ✓		
CHECKED BY	J Katzman 11-10-66		
GR LEADER	11/10		
VEH DES INT	J. Pusatu 11/10/66		
STRUCTURES	AJR EP 11/11	PROJ ENGR	(AR) 11-12
STRUCTURES		REL GROUP	
WEIGHTS			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

WEB
ASCENT STAGE ~ MID. SECTION
LOWER THERMAL SHIELD

SIZE	CODE IDENT NO.		
B	26512	LDW280-11210	A
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 12-65

CDR 11-15-66

01

NAS 9-1100

1

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00, 1.10		F			✓	LEO280-506 LCD 1124	ADDED PA-1 REQMTS TO -11; ADDED SH 1.10	PA-1 (47)	NOT	REQD	F. RODGERS 12-11-68 E.C.G.		
	2	1.10 3.00	5C			✓		EO A2 LCD 1244	ON -11, ADDED CUTOUT	PA-1, LM-3 THRU LM-15	✓				
	3	1.10 3.00	4C			✓		EO A3 LCD 1422	REVISED CUTOUT IN LDW280-11210-11	PA-1, LM 3 THRU LM-15	✓				
	4	1.00, 1.10					✓	LEO280-736 LCD 2104	FOR -11 ADDED QUAL. TEST REQUIREMENTS	QUAL. TEST	NOT	REQD.			
	5	1.00, 1.10, 2.00 3.00	6B	LFM 95				EO A5 LCD 2360 LCD 2501 ®	IN FLD DWG, L/M & M/B ADDED -13; IN M/B FOR -11 REMOVED LM-3 THRU LM-15 & PA-1 EFFECTIVITY (-13 MAY BE MADE FROM -11)	PA-1, LM-3 THRU LM-15	NOTED				

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCT	STRUCT	WEIGHTS	RELIABILITY					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11210	A
SCALE	NONE		SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11210-13	E	WEB	AL ALLOY SH	QQ-A-250/12	7075-T6	.040×25×60	CM	88	
								LDW280-11210-11	E	WEB	AL ALLOY SH	QQ-A-250/12	7075-T6	.040×25×60	CM	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						CM	CHEM-MILL	LSP 14-26100
						88	ANODIZE	LSP 14-9030

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :
NONE

GRUMMAN AIRCRAFT ENGRG CORP , BETHPAGE, L. I., NEW YORK

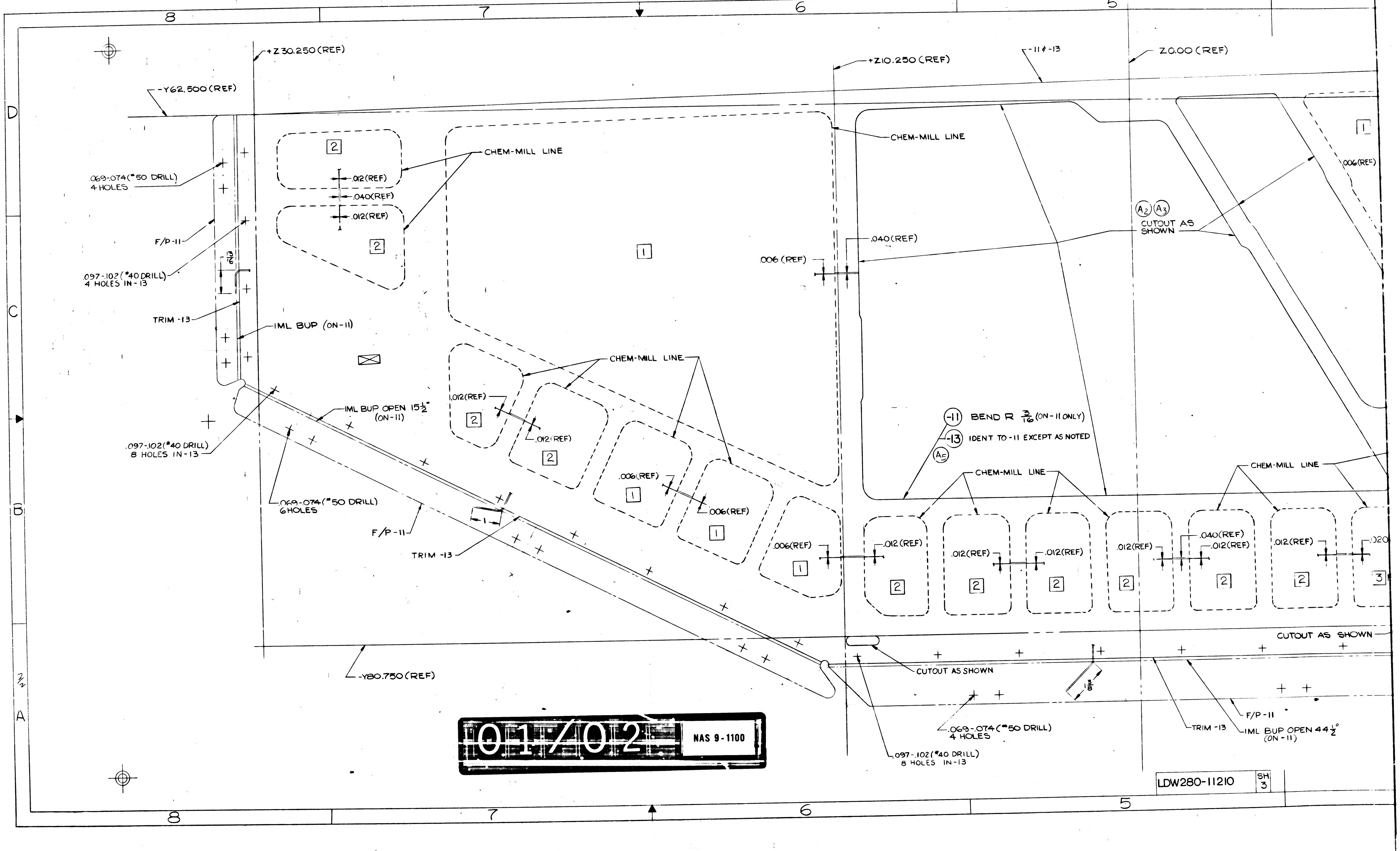
SIZE	CODE IDENT NO.		
B	26512	LDW280-11210	A

SCALE NONE
SHEET 200

ENG 77.2 7-65

01

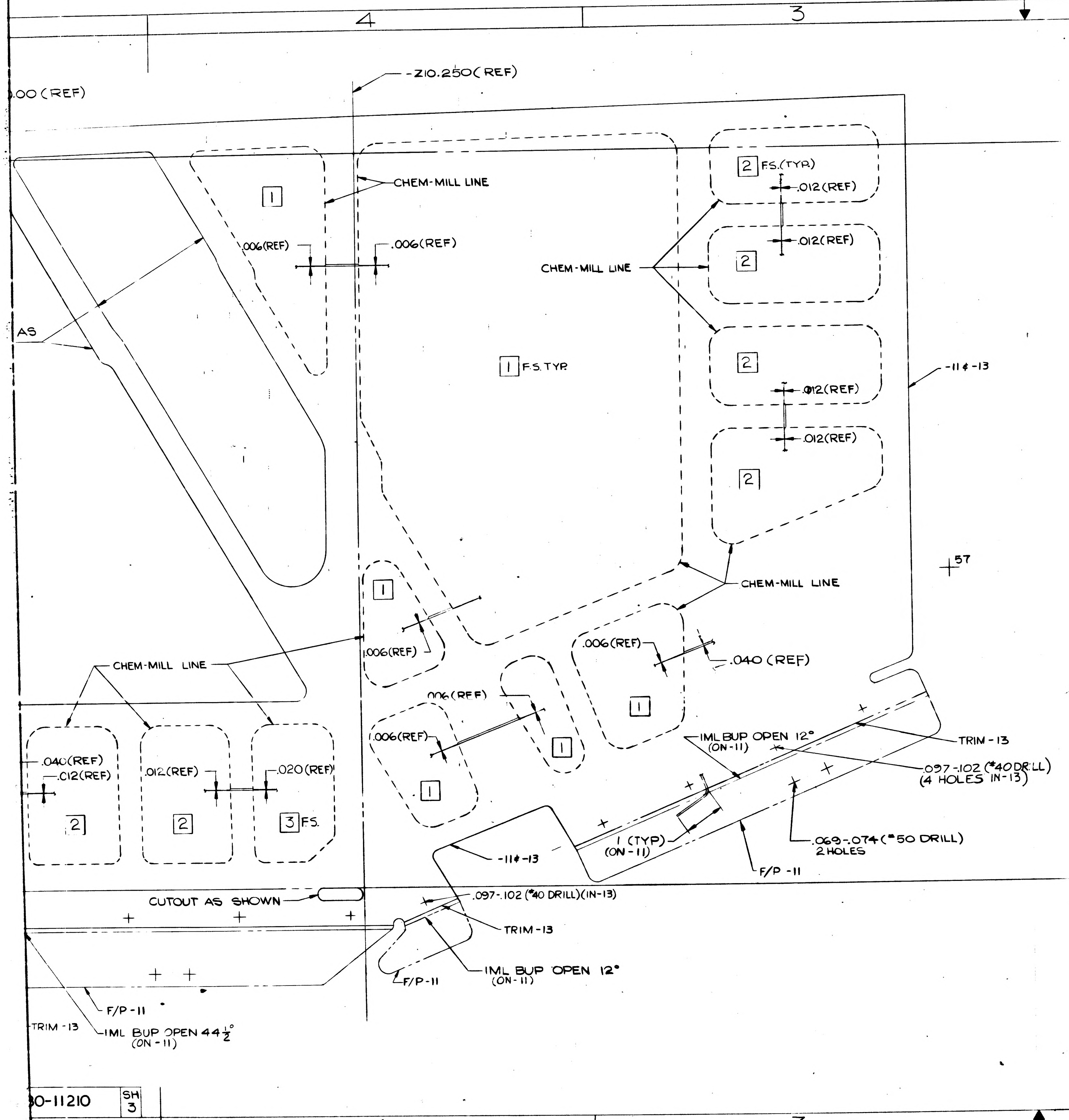
NAS 9-1100


8
7
6
5
D
C
B
A
+Z30.250 (REF)
+Z10.250 (REF)
-11 & -13
Z0.00 (REF)
-Y62.500 (REF)
-Y80.750 (REF)
CHEM-MILL LINE
CHEM-MILL LINE
CHEM-MILL LINE
CHEM-MILL LINE
CHEM-MILL LINE
2
2
1
1
1
1
2
2
2
2
2
2
2
2
2
1
3
.012 (REF)
.040 (REF)
.012 (REF)
.006 (REF)
.040 (REF)
.006 (REF)
.069-.074 (#50 DRILL) 4 HOLES
F/P -11
.097-.102 (#40 DRILL) 4 HOLES IN -13
6 1/2
TRIM -13
IML BUP (ON -11)
IML BUP OPEN 15 1/2° (ON -11)
.097-.102 (#40 DRILL) 8 HOLES IN -13
.012 (REF)
.012 (REF)
.006 (REF)
.006 (REF)
.006 (REF)
.012 (REF)
.069-.074 (#50 DRILL) 6 HOLES
F/P -11
1
TRIM -13
A2 A3
CUTOUT AS SHOWN
-11 BEND R 3/16 (ON -11 ONLY)
-13 IDENT TO -11 EXCEPT AS NOTED
A5
.012 (REF)
.012 (REF)
.012 (REF)
.012 (REF)
.040 (REF)
.012 (REF)
.012 (REF)
.020
.006 (REF)
CUTOUT AS SHOWN
CUTOUT AS SHOWN
1 3/8
.069-.074 (#50 DRILL) 4 HOLES
.097-.102 (#40 DRILL) 8 HOLES IN -13
TRIM -13
F/P -11
IML BUP OPEN 44 1/2° (ON -11)
8
7
6
5

01/02

NAS 9-1100

LDW280-11210 SH 3



4
3
2
1
-Z10.250(REF)
.00(REF)
CHEM-MILL LINE
1
.006(REF)
.006(REF)
2 F.S.(TYP)
.012(REF)
.012(REF)
CHEM-MILL LINE
2
1 F.S. TYP
2
.012(REF)
.012(REF)
-11 & -13
2
AS
CHEM-MILL LINE
1
.006(REF)
.006(REF)
.040 (REF)
1
CHEM-MILL LINE
.006(REF)
.006(REF)
1
1
.040(REF)
.012(REF)
.012(REF)
.020(REF)
2
2
3 F.S.
IML BUP OPEN 12°
(ON-11)
TRIM-13
.097-.102 (#40 DRILL)
(4 HOLES IN-13)
1 (TYP)
(ON-11)
.069-.074 (#50 DRILL)
2 HOLES
-11 & -13
F/P-11
CUTOUT AS SHOWN
.097-.102 (#40 DRILL)(IN-13)
TRIM-13
IML BUP OPEN 12°
(ON-11)
F/P-11
F/P-11
TRIM-13
IML BUP OPEN 44½°
(ON-11)
30-11210
SH 3
4
3
2
57
70
25

NOTE:
1. NO TOOLING HOLES PERMITTED IN PARTS

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 28x88
PRINTING INFO ONLY
FULL SIZE SHEET AREA (30x 90) = 22.5 SQ. FT.
¼ SIZE SHEET AREA (¼ OF FULL) = 5.6 SQ. FT.
PRINT TRIM LINE

D

C

B

A

LDW280-11210 A

LDW280-11210-11 & -13

CHEM-MILL LINE TOLERANCE:
±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED)
±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	*DEPTH OF CUT.
1	$.006^{+.003}_{-.001}$	.034 (REF)
2	$.012^{+.003}_{-.001}$	.028(REF)
3	$.020^{+.003}_{-.001}$	.020(REF)

02/02 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

LM	SIZE H	CODE IDENT NO. 26512	LDW280-11210	A
MODEL OR END ITEM	SCALE FULL		SHEET 300	

K2

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ENG 73-6 6-64

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280
EO NO. 1488
CONTROL INFO NO. LDW280B8212

FOR THE FOLLOWING DWGS (*) [redacted]

REMOVE [redacted] LM-15 (45): EFF.

DRAWING Nº (*)	** DASH Nº [redacted]		TITLE	NEXT ASSEMBLY	CHANGE Nº
LDW280-11604 ✓	-11 13 15	[redacted]	SEE DWG	LDW 280-53159	B5
-11005 ✓	-11 17 -19	[redacted]			B5
-11211 ✓	-21	[redacted]			B1
-11007 ✓	-11 13	[redacted]			B5
-10996 ✓	-11	[redacted]			C1
-11012 ✓	-11	[redacted]			C5
-11798 ✓	-11, -13	[redacted]			B1
-11210 ✓	-13	[redacted]			B1
-11212	-15	[redacted]			B1
LDW280-11213	-11,-13,-15,-17,-19	[redacted]	SEE DWG	LDW280-53159	A3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD # 3581 [redacted] PKG 13 Pg. 9810 (5)

REASON FOR EO: CONFIGURATION CHANGE TO LM-15

DESCRIPTION OF EO: FOR [redacted] (** [redacted]) REMOVED [redacted] LM-15 (45) EFF.

Ⓟ GAEC EO RELEASE 7-17-69
JK 7/3/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			✓

APPROVED BY		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	EO
DATE	7/8/69 VDT				7/3/69		7/10/69	7-26-69

PRIORITY: C
DRAWING TITLE: SEE DRAWING
DRAWING NO.: LEO-280
EO NO.: 1488

7-15-69
ISSUED BY GEO. W. ROCKLEIN X86048 4/25/69 (ML) SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11211 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53159	LM-3(33)	1
LM	LDW280-53159	QUAL TEST(70)	1
PART NO. LDW280-11211-17		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53159	LM-3(33)	1
PART NO. LDW280-11211-19		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 95	LDW280-53159	PA-1(47)	1
LM		LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM 6(36)	1
		LM-5(35)	1
LM	LDW280-53159	LM-4(34)	1
PART NO. LDW280-11211-21		GAEC SCH NO. 30	

15

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00		1.10	
REV	A		A		A		A	
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED	-	GRUMMAN REL INFO A	
		PRIM NO.	JK(001) EMF
LAST DASH NO. USED	-21	215	VHP-1H 10/1/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	GENTILE 11/10/66	RELIABILITY	
LAYOUT BY	PFORTSCH ✓	THERMO	AB 11/11/66
CHECKED BY	11-10-66		
GR. LDR	11-10		
V.D.I	J. Puzatere 11/10/66		
STRUCT	FEB 11/11	PROJ ENGR	(WR) 11-12
STRUCT		REL GROUP	11/12/66
WEIGHTS			

②
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

WEB
ASCENT STAGE ~ MID SECTION
BOTTOM SHIELD L.H.

SIZE	CODE IDENT NO.		
B	26512	LDW280-11211	A ②
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

CDR 11-15-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS REWORK	DISPOSITION OF EXISTING PARTS SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10, 2.00 & 3.00	9C				✓	EO A1	DELETED -11 & -13, ADDED -15 & -17. (-15 & -17 MAY BE MADE FROM NON CHEM MILLED -11 & -13 RESPECTIVELLY) ADDED SH. 1.10.	LM-3 THRU LM-15	NOTED		S. AUGELLO 9-27-68		
	2	1.00					✓	LE0280-506 LCD 19-1124	ADDED PA-1(47) REQT'S TO -17	PA-1 (47)	NOT	REQD			
	3	1.00					✓	LE0280-736 LCD-2104	FOR -17 ADDED QUAL TEST REQUIREMENTS.	QUAL TEST	NOT	REQD			
	4	1.00, 2.00 & 3.00	6C	O LFM 95		✓		EO A4 LCD-2360 LCD-2501	IN F/D & L/M ADDED -19 & -21. IN MOD BLOCK FOR -19 ADDED LM-3 EFF.; FOR -21 ADDED LM-4 THRU LM-15 & PA-1 EFF.; FOR -17 REMOVED LM-4 THRU LM-15 & PA-1 EFF. IN MOD BLOCK REMOVED -15. (-19 & -21 MAY BE MADE BY REWORKING -15 & -17 RESP.) ADDED NOTE 2	LM-3 THRU LM-15 & PA-1	NOTED				
	5	3.00	3D	O LFM 95 LFM 140		✓		EO A5 LCD-2360 LCD2501	REVISED TRIM OF -19 & -21	LM-3 THRU LM-15 & PA-1	✓		H.D.		

FOR CONTINUATION OF REVISIONS SEE SHEET ________

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11211	A
SCALE NONE			SHEET 1.10

ENG 77.3 5-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11211-21	E	WEB	AL ALLOY SH	QQ-A-250/12	7075 T6	.040X43X84	CM	88	6C
		LDW280-11211-19	E	WEB	AL ALLOY SH	QQ-A-250/12	7075 T6	.040X43X84	CM	88	6C
		LDW280-11211-17	E	WEB	AL ALLOY SH	QQ-A-250/12	7075 T6	.040X43X84	CM	88	6C

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP-14-9030
						CM	CHEM-MILL	LSP-14-26100

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11211	A

Ⓐ

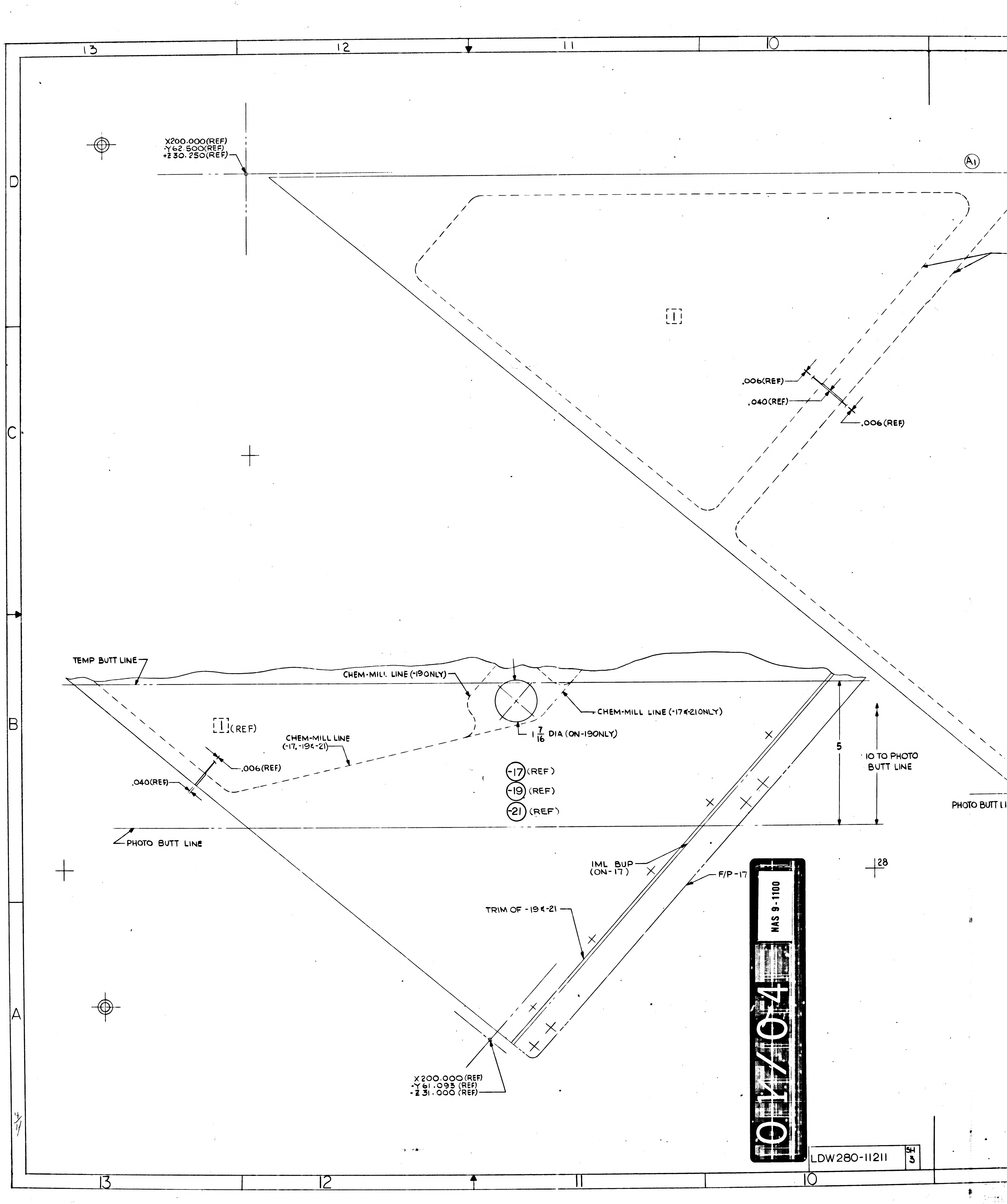
SCALE NONE

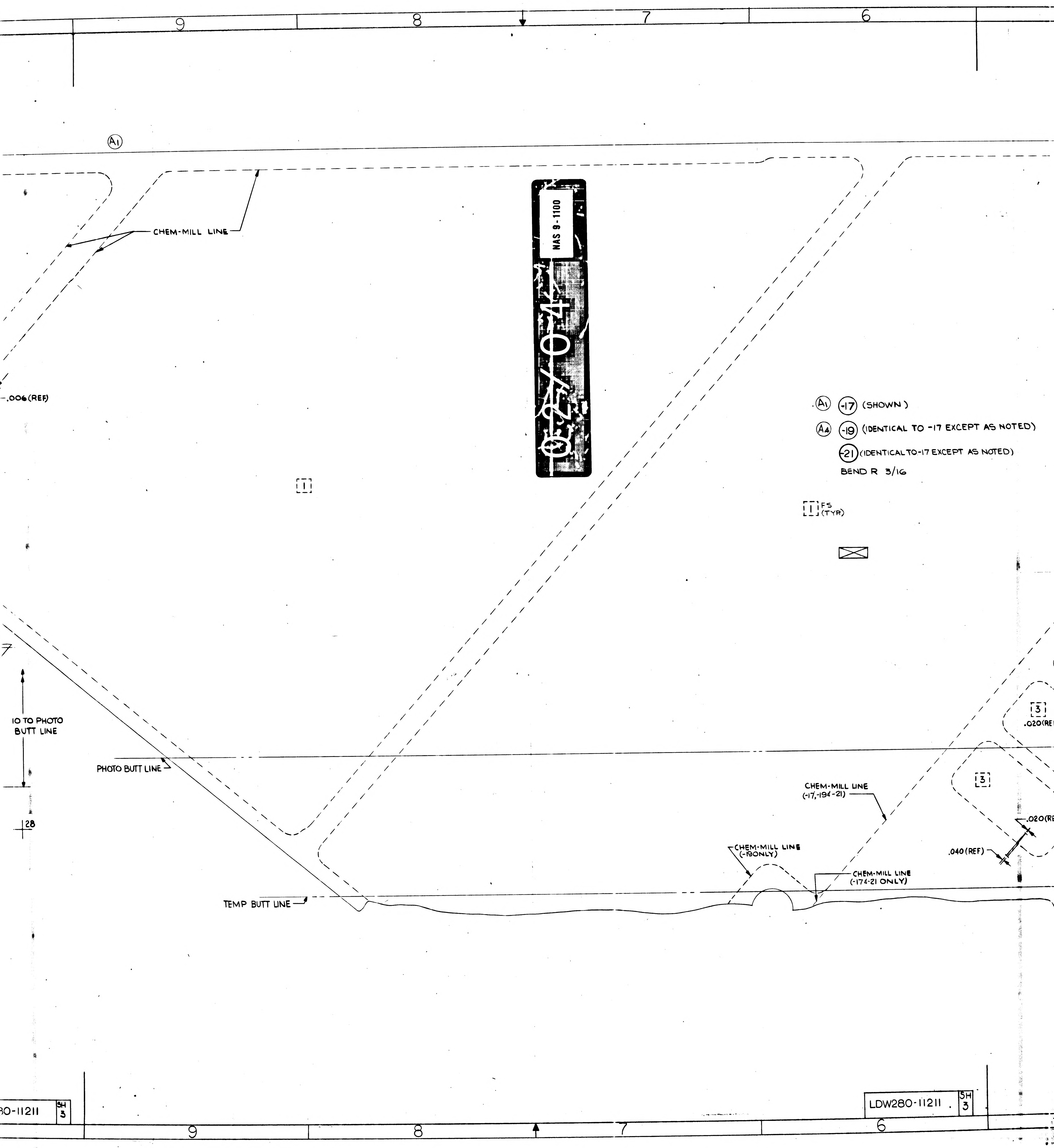
SHEET 2.00

ENG 77.2 7-65

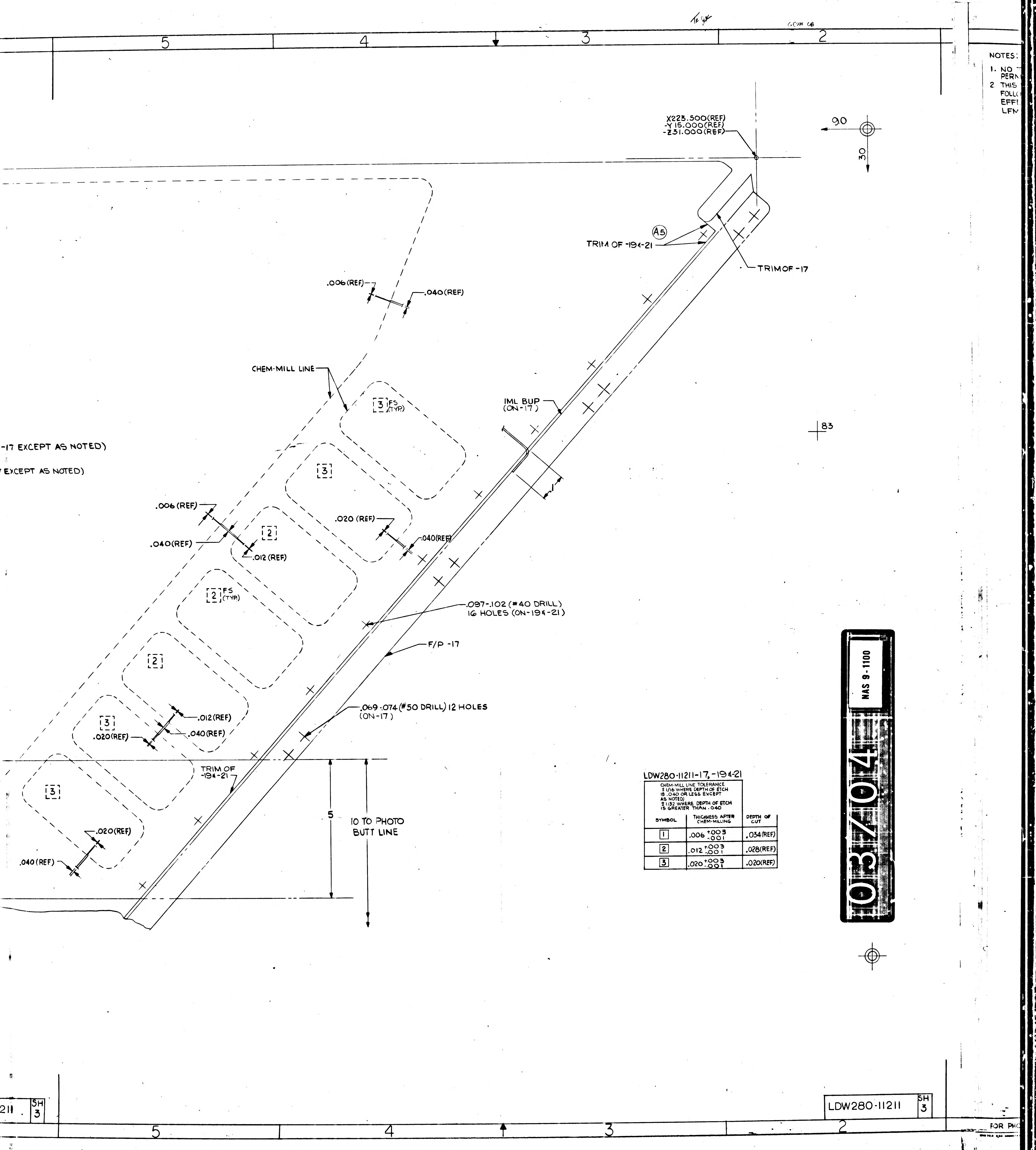
01

NAS 9-1100


13
12
11
10
D
C
B
A
X200.000(REF)
-Y62.500(REF)
+Z30.250(REF)
A1
[I]
.006(REF)
.040(REF)
.006(REF)
TEMP BUTT LINE
CHEM-MILL LINE (-19 ONLY)
CHEM-MILL LINE (-17 & -21 ONLY)
[I] (REF)
CHEM-MILL LINE
(-17, -19 & -21)
1 7/16 DIA (ON-19 ONLY)
.006(REF)
.040(REF)
-17 (REF)
-19 (REF)
-21 (REF)
5
10 TO PHOTO
BUTT LINE
PHOTO BUTT LINE
PHOTO BUTT LI
IML BUP
(ON-17)
F/P-17
28
TRIM OF -19 & -21
X200.000(REF)
-Y61.093 (REF)
-Z31.000 (REF)
01/04
NAS 9-1100
LDW280-11211
SH 3
4/4

9
8
7
6
(A1)
CHEM-MILL LINE
-.006 (REF)
[1]
(A1) (-17) (SHOWN)
(A4) (-19) (IDENTICAL TO -17 EXCEPT AS NOTED)
(-21) (IDENTICAL TO -17 EXCEPT AS NOTED)
BEND R 3/16
[1] FS (TYP)
10 TO PHOTO BUTT LINE
PHOTO BUTT LINE
28
[3]
.020 (REF)
[3]
CHEM-MILL LINE (-17,-19&-21)
.020 (REF)
CHEM-MILL LINE (-19 ONLY)
.040 (REF)
CHEM-MILL LINE (-17&-21 ONLY)
TEMP BUTT LINE
80-11211 SH 3
LDW280-11211 SH 3

NAS 9-1100



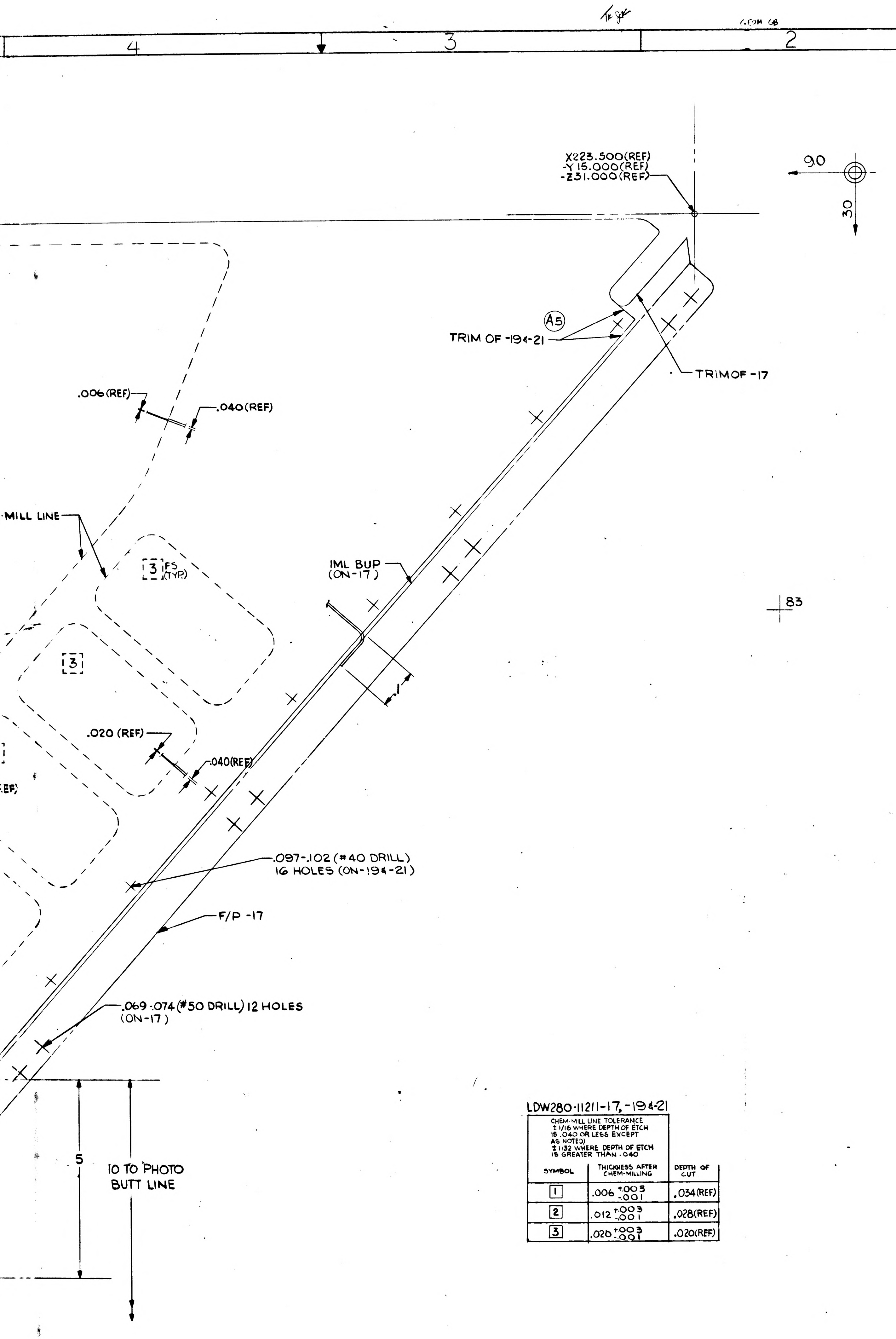
NOTES:
1. NO
PERN
2 THIS
FOLL
EFFE
LFM
-17 EXCEPT AS NOTED)
EXCEPT AS NOTED)
X223.500(REF)
-Y15.000(REF)
-Z31.000(REF)
90
30
A5
TRIM OF -19&-21
TRIMOF -17
.006(REF)
.040(REF)
CHEM-MILL LINE
3 FS (TYP)
IML BUP (ON-17)
83
3
.006 (REF)
.040(REF)
2
.012 (REF)
.020 (REF)
.040(REF)
2 FS (TYP)
.097-.102 (#40 DRILL) 16 HOLES (ON-19&-21)
F/P -17
2
3
.012(REF)
.040(REF)
.020(REF)
.069-.074 (#50 DRILL) 12 HOLES (ON-17)
TRIM OF -19&-21
3
5
10 TO PHOTO BUTT LINE
.020(REF)
.040 (REF)
5
4
3
2
211 . SH 3
LDW280-11211 SH 3
FOR PH

LDW280-11211-17, -19&-21

CHEM-MILL LINE TOLERANCE
± 1/16 WHERE DEPTH OF ETCH
IS .040 OR LESS EXCEPT
AS NOTED)
± 1/32 WHERE DEPTH OF ETCH
IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
1	$.006^{+.003}_{-.001}$	.034(REF)
2	$.012^{+.003}_{-.001}$	.028(REF)
3	$.020^{+.003}_{-.001}$	.020(REF)

03/04 NAS 9-1100



LDW280-11211-17, -19&-21

CHEM-MILL LINE TOLERANCE
±1/16 WHERE DEPTH OF ETCH
IS .040 OR LESS EXCEPT
AS NOTED)
±1/32 WHERE DEPTH OF ETCH
IS GREATER THAN .040

SYMBOL	THICKNESS AFTER CHEM-MILLING	DEPTH OF CUT
1	$.006^{+.003}_{-.001}$	.034(REF)
2	$.012^{+.003}_{-.001}$	.028(REF)
3	$.020^{+.003}_{-.001}$	.020(REF)

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. THIS DRAWING AFFECTED BY THE FOLLOWING LFM(S). SEE LFM FOR EFFECTIVITY AND MODIFICATION: LFM-95, 140

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 40 X 109

PRINTING INFO ONLY
FULL SIZE SHEET AREA (½X108)- 31.5 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL)- 7.875 SQ. FT.
PRINT TRIM LINE

D
C
B
A

04704

NAS 9-1100

LDW280-11211 A
LDW280-11211 A

LDW280-11211 SH 3

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LM	SIZE K	CODE IDENT NO. 26512	LDW280-11211	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

Ⓐ

FOR PHOTO REPRODUCTION

4FR
K2

ENG 72.8 6-64 RIDGWAY'S 418L

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280 | EO NO. 1488
CONTROL INFO NO. LDW280B8212

FOR THE FOLLOWING DWGS (*) [redacted]

REMOVE [redacted] LM-15 (45): EFF.

DRAWING No (*)	** DASH No [redacted]	[redacted]	TITLE	NEXT ASSEMBLY	CHANGE No
LDW280-11004 ✓	-11, 13, 15	[redacted]	SEE DWG	LDW 280-53159	B5
-11005 ✓	-11-17-19	[redacted]			B5
-11211 ✓	-21	[redacted]			B1
-11007	-11, 13	[redacted]			B5
-10996	-11	[redacted]			C1
-11012	-11	[redacted]			C5
-11798	-11,-13	[redacted]			B1
-11210	-13	[redacted]			B1
-11212	-15	[redacted]			B1
LDW280-11213	11-13,-15,-17-19	[redacted]	SEE DWG	LDW280-53159	A3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD # 3587 [redacted] PKG 13 FG. 9 & 10 (5)

REASON FOR EO: CONFIGURATION CHANGE TO LM-15

DESCRIPTION OF EO: FOR [redacted] (*-**) [redacted]) REMOVED [redacted] LM-15 (45) EFF.

GAEC EO RELEASE: 7-17-69

K 7/23/69

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD

DISPOSITION OF PARTS: REWORK SCRAP ✓

APPROVED BY	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	EPD
DATE 7/8/69			7-4-69	7/11/69		7/10/69	7-26-69

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DRAWING	LEO-280	1488

7-15-69
ISSUED BY GEO. W. ROCKLEIN X86048 6/25/69 (ML) SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11212 A

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53159	LM-3(33)	1

PART NO. LDW280-11212-17

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53159	QUALTEST(70)	1

PART NO. LDW 280-11212-13

GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53159	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9 (39)	1
		LM-8(38)	1
		LM-7(37)	1
LM		LM-6 (36)	1
LFM 140		LM-5(35)	1
LFM 140		LM-4(34)	1
LFM-95	LDW280-53159	PA-1(47)	1

PART NO. LDW280-11212-15

GAEC SCH NO. 30

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO A	
LAST DASH NO. USED	-17	PRIM NO. 215	JK(001) EHF

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100
LINE ITEM #1
DOCUMENTATION TYPE II

DRAWN BY	H.DEUTSCH 11/10/66		
LAYOUT BY	PFORTSCH ✓	THERMO	11/11
CHECKED BY	11-10 66		
GR.LEADER	11/11		
VEH DES INT	J. Pusateri 11/11/66		
STRUCTURE	11/12/66 for	PROJ ENGR	11/12
STRUCTURE	R.A. HILDERMAN	REL GROUP	11/12/66
WEIGHTS			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

WEB
ASCENT STAGE - MID SECTION
BOTTOM SHIELD L.H.

SIZE B | CODE IDENT NO. 26512 | LDW280-11212 | A
SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

CDR 11-15-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ______

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS		CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
											REWORK	SCRAP			
A	1	1.00, 1.10, 2.00, 3.00	10B				✓	EO-A1	DELETED -11, ADDED -13 ADDED SHEET 1.10	LM-3 THRU LM-15		-11	S. AUGELLO 5-13-68		
	2	1.00,					✓	LE0280-506 LCD-1124	ADDED PA-1 (47) REQTS. TO -13	PA-1	NOT	REQD.			
	3	3.00	10D				✓	EO-A3	TRIMMED -13	LM-3 THRU-15 PA-1	✓				
	4	1.00					✓	LE0280-736 LCD-2104	FOR -13, ADDED QUAL TEST REQUIREMENTS	QUAL TEST	NOT	REQD.			
	5	3.00	10D				✓	EO-A5	CHAMFER -13.	LM-3 THRU-15 PA-1, QUAL TEST	✓				
	6	1.00, 2.00, 3.00	10B	O LFM#95		✓		EO-A6 LCD-2360 & 2501	IN FIELD, B/M & MOD/BLK, ADDED-15. IN MOD/BLK FOR-13, REMOVED LM-3 THRU LM-15 & PA-1 EFF. -15 MAY BE MADE BY REWORKING -13.	LM-3 THRU-15 PA-1	NOTE	D			
	7	1.00, 2.00, 3.00	10B				✓	EO-A7	REMOVED LM-3(33) EFF. FOR-15. ADDED-17 FOR LM-3(33) ONLY	LM-3		✓			
	8	3.00	10D	LFM#95		✓		EO-A8 LCD-2360 & 2501	REF. EO-A6, ADDED 1½ DIM. ADDED 1 11/16 DIM. DRILL #40 (.097-.102) 13 REQD. WAS 14 REQD.	LM-3 THRU-15 PA-1	✓				
	9	1.10		LFM# 140		✓		EO-A9 LCD 2360 LCD 2501 (e)	REF E.O. A8 REMOVED LM-3(33) EFF FROM E.O. A8 ADDED LFM# 140 FOR LM-4 & LM-5	LM-4 & LM-5	✓	A.S.	H.D.		

CHG APPROVED

LTR	GROUP LDR	VEH. DES. INT	STRUCTURES	STRUCTURES	WEIGHTS	THERMO					
A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11212	A (a)
SCALE NONE			SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								LDW280-11212-17	E	WEB	AL ALLOY SH	QQ-A-250/12	7075-T6	.040×36×85	CM	88	10B
								LDW280-11212-15	E	WEB	AL ALLOY SH	QQ-A-250/12	7075-T6	.040×36×85	CM	88	10B
								LDW280-11212-13	E	WEB	AL ALLOY SH	QQ-A-250/12	7075-T6	.040X36X85	CM	88	10B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP 14-9030
						CM	CHEM-MILLING	LSP 14-26100

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-11212	A

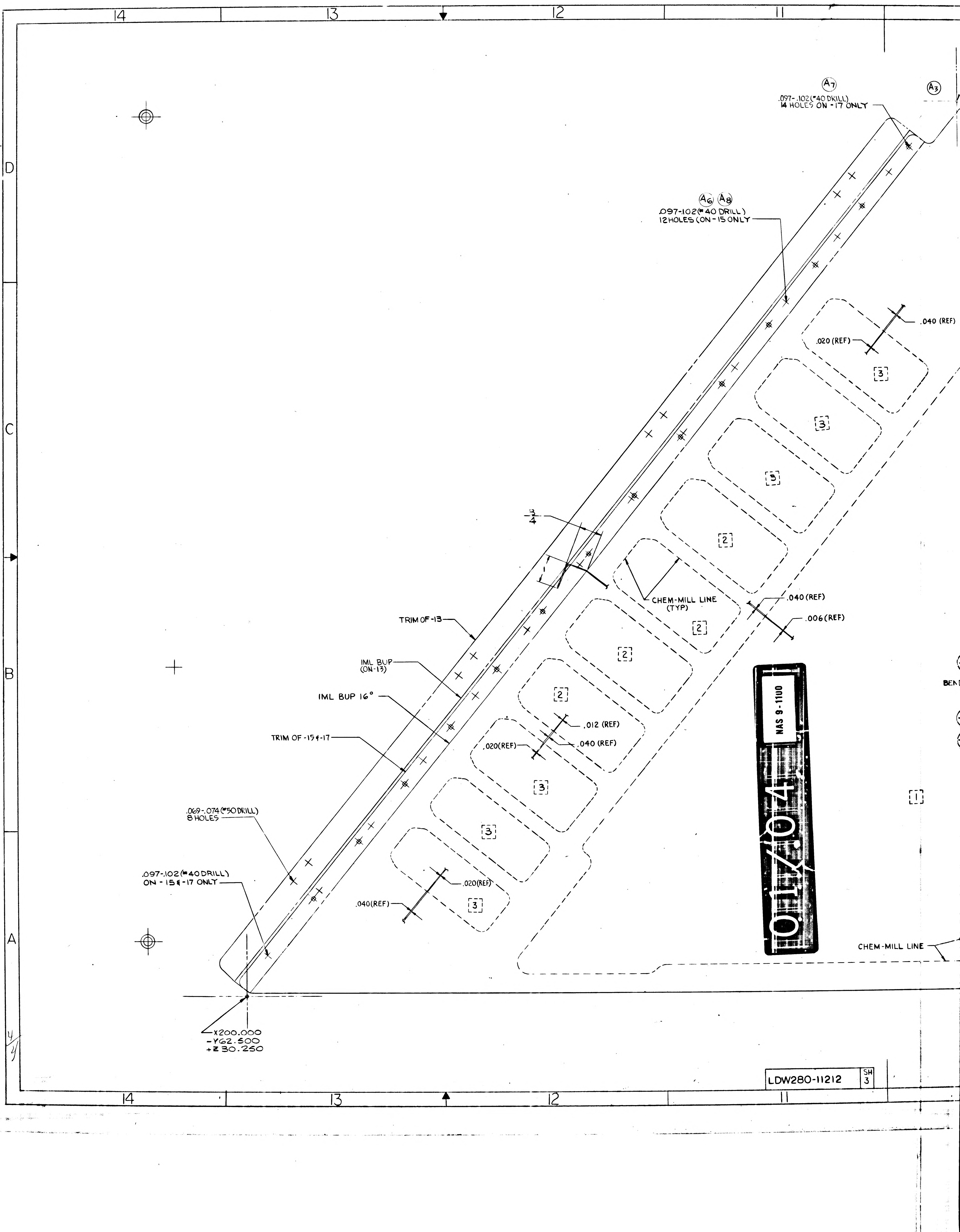
SCALE NONE

SHEET 2.00

ENG 77.2 7-65

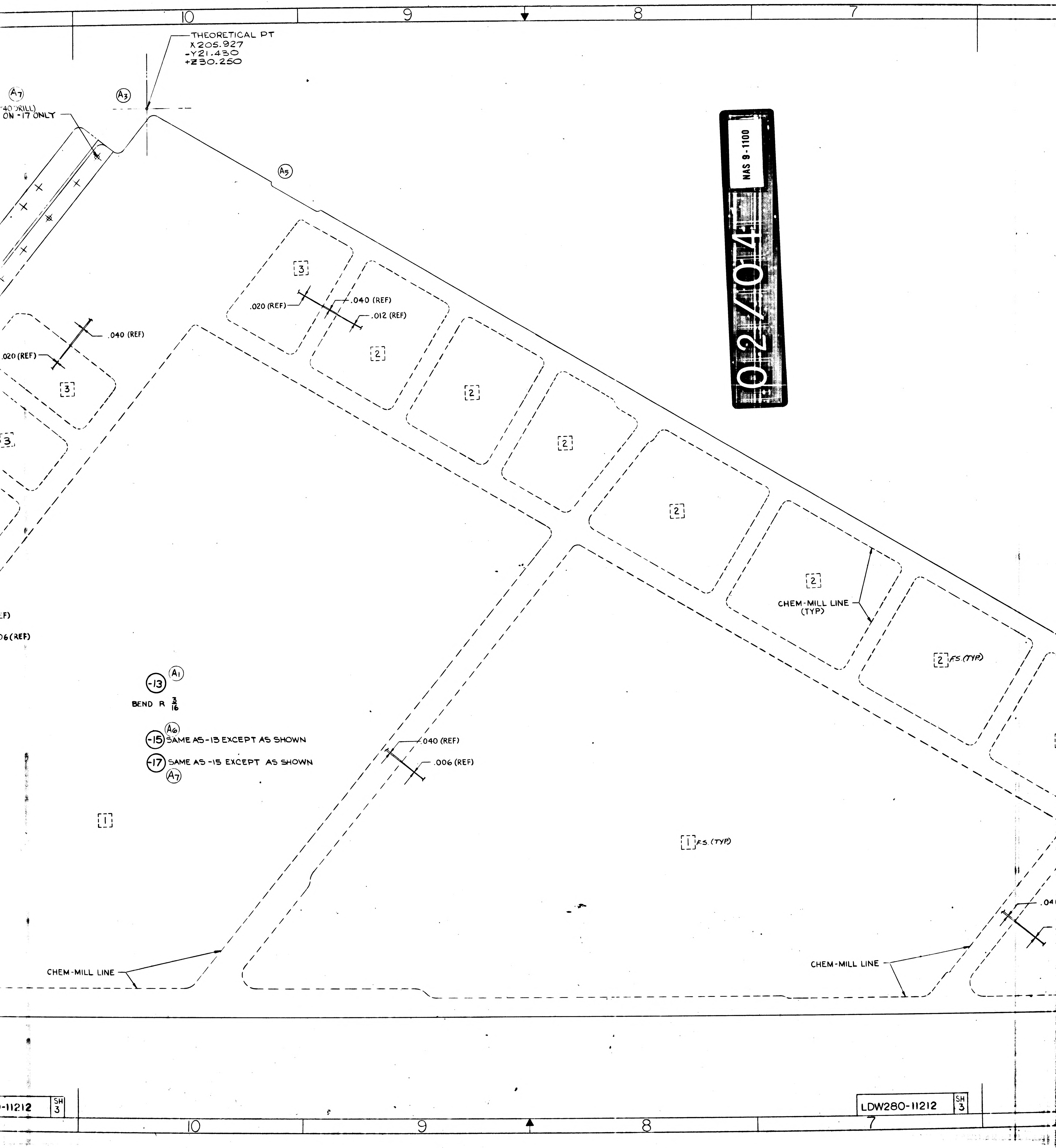
01

NAS 9-1100


14
13
12
11
D
C
B
A
(A7)
.097-.102(#40 DRILL)
14 HOLES ON -17 ONLY
(A3)
(A6) (A8)
.097-.102(#40 DRILL)
12 HOLES (ON-15 ONLY
.040 (REF)
.020 (REF)
3
3
3
3/4
2
CHEM-MILL LINE
(TYP)
.040 (REF)
.006 (REF)
2
2
2
TRIM OF -13
IML BUP
(ON-13)
IML BUP 16°
.012 (REF)
.040 (REF)
.020(REF)
TRIM OF -15 & -17
3
3
.069-.074(#50 DRILL)
8 HOLES
.097-.102(#40 DRILL)
ON -15 & -17 ONLY
.020(REF)
.040(REF)
3
1
BEN
CHEM-MILL LINE
X200.000
-Y62.500
+Z30.250
4/4

01/04 NAS 9-11U0

LDW280-11212 SH 3

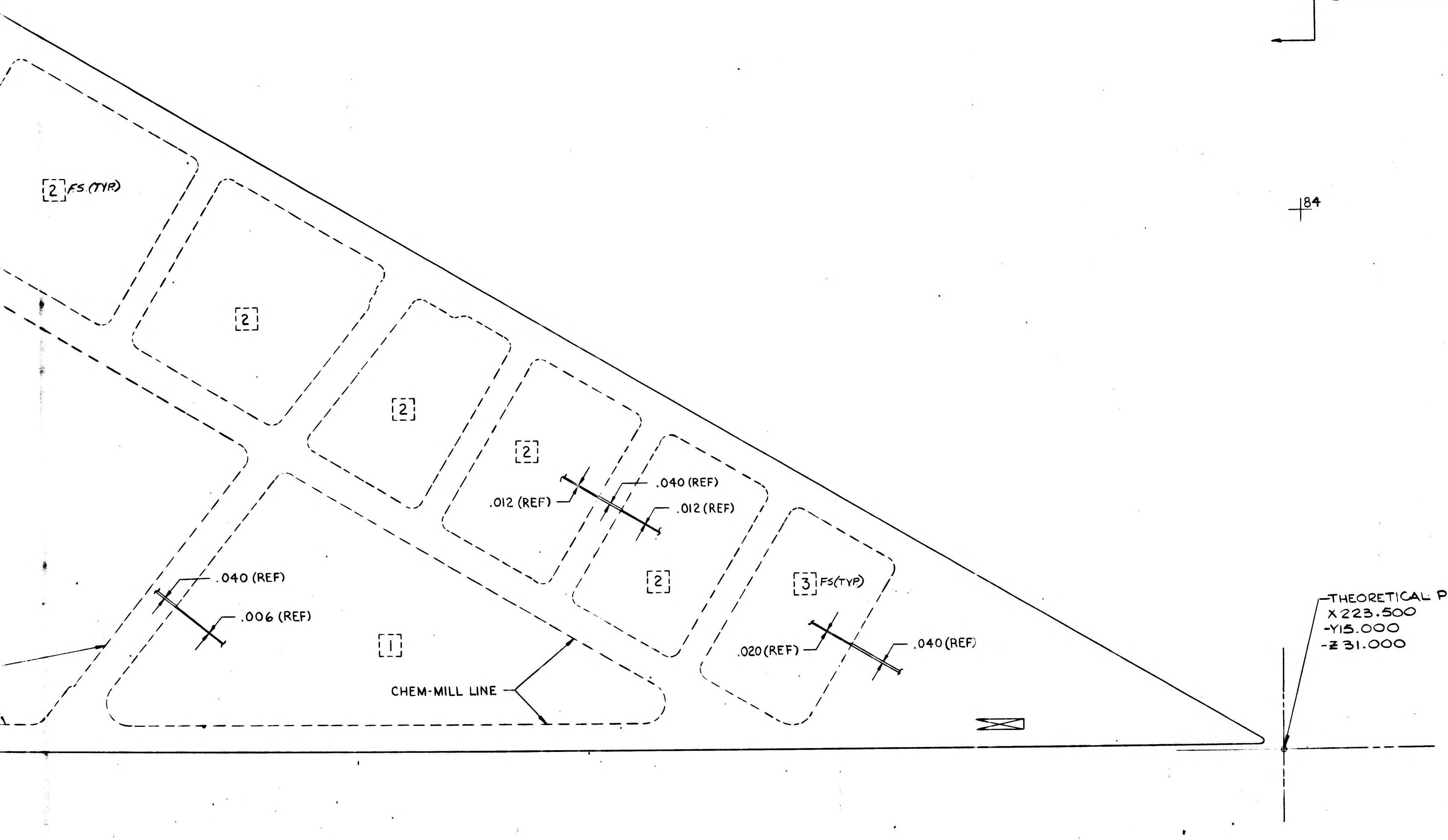

10
9
8
7
THEORETICAL PT
X205.927
-Y21.430
+Z30.250
(A7)
.040 DRILL)
ON -17 ONLY
(A3)
(A5)
3
.020 (REF)
.040 (REF)
.012 (REF)
2
.040 (REF)
.020 (REF)
3
3
2
2
2
2
2
CHEM-MILL LINE
(TYP)
2 F.S. (TYP)
(-13) (A1)
BEND R 3/16
(A6)
(-15) SAME AS -13 EXCEPT AS SHOWN
(-17) SAME AS -15 EXCEPT AS SHOWN
(A7)
.040 (REF)
.006 (REF)
1
1 F.S. (TYP)
CHEM-MILL LINE
CHEM-MILL LINE
-11212 SH 3
LDW280-11212 SH 3
10
9
8
7

02/04 NAS 9-1100

03/04 NAS 9-1100

SYMBOL LEGEND

SYMBOLS ARE FOR LOCATION AND QUANTITY ONLY


[2] FS (TYP)
[2]
[2]
[2]
[1]
[2]
[3] FS (TYP)
.040 (REF)
.006 (REF)
.012 (REF)
.040 (REF)
.012 (REF)
.020 (REF)
.040 (REF)
CHEM-MILL LINE
THEORETICAL PT
X 223.500
-Y15.000
-Z 31.000

NOTE :

1. NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 40x 112

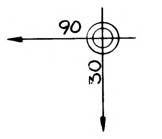
PRINTING INFO ONLY

FULL SIZE SHEET AREA (42x 114) = 33.3 SQ. FT.

½ SIZE SHEET AREA (¼ OF FULL) = 8.3 SQ. FT.

PRINT TRIM LINE

Geom CMC

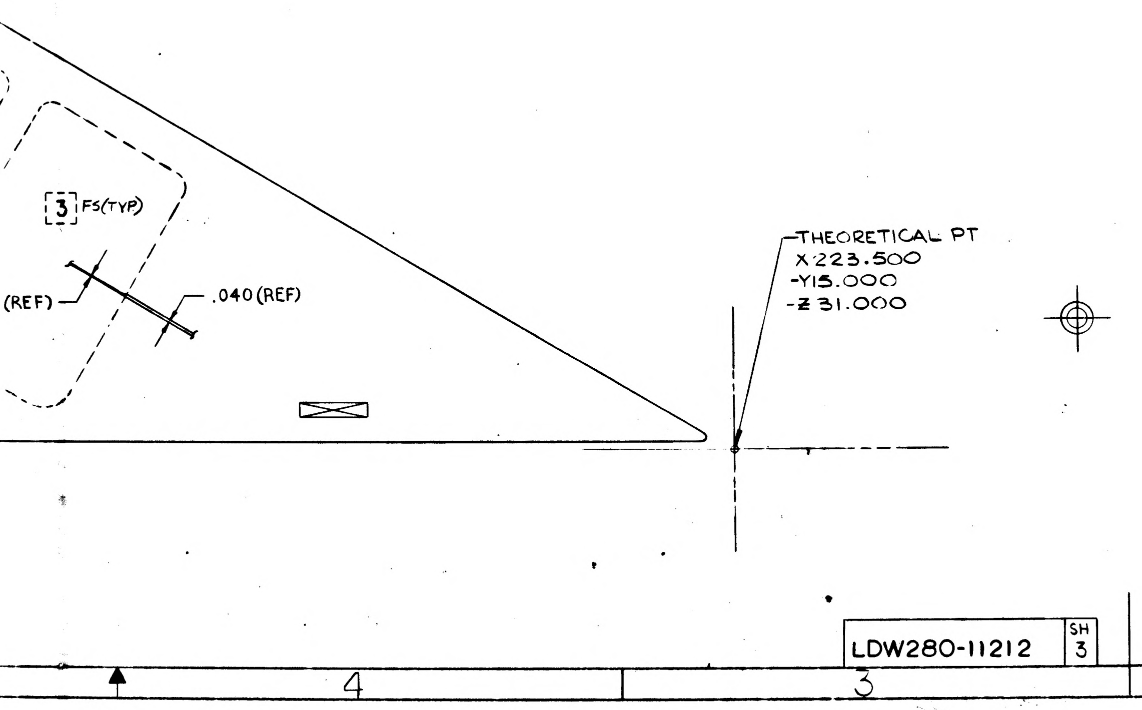


SYMBOL LEGEND

+ ⌖ —SYMBOLS ARE FOR LOCATION AND QUANTITY ONLY

LDW280-11212-13, -15 & -17

CHEM-MILL LINE TOLERANCE ±1/16 WHERE DEPTH OF ETCH IS .040 OR LESS (EXCEPT AS NOTED) ±1/32 WHERE DEPTH OF ETCH IS GREATER THAN .040		
SYMBOL	THICKNESS AFTER CHEM-MILLING	* DEPTH OF CUT
1	.006 +.003 -.001	.034 (REF)
2	.012 +.003 -.001	.028 (REF)
3	.020 +.003 -.001	.020 (REF)



04Z04 NAS 9-1100

LDW280-11212 SH 3

	R GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
	SIZE K	CODE IDENT NO. 26512	LDW280-11212	A
LM MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION 4 FR

ENG 73-8 6-64

K2

LDW280-11212 A

LDW280-11212 A

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280 EO NO. 1488
CONTROL INFO NO. LDW280B8212

FOR THE FOLLOWING DWGS (*) [redacted]

REMOVE [redacted] LM-15 (45): EFF.

DRAWING Nº (*)	** DASH Nº [redacted]		TITLE	NEXT ASSEMBLY	CHANGE Nº
LDW280 - 11004 ✓	-11 13 15	[redacted]	SEE DWG	LDW 280 - 53159	B5
-11[illegible]5 ✓	-11 17 -19	[redacted]			B5
-11211 ✓	-21	[redacted]			B1
-11007 ✓	-11 13				B5
-10996	-11				C1
-11012	-11				C5
-11798 ✓	-11, -13	[redacted]			B1
-11210	-13	[redacted]			B1
-11212 ✓	-15	[redacted]			B1
LDW280 - 11213	-11, -13, -15, -17, -19	[redacted]	SEE DWG	LDW280 - 53159	A3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ☑ LCD # 3587 [redacted] PKG 13 PG. 9 810 (5)

REASON FOR EO

CONFIGURATION CHANGE TO LM-15

DESCRIPTION OF EO

FOR [redacted] (* - [redacted] **) REMOVED [redacted] LM-15 (45) EFF.

(P) GAEC INT. EO RELEASE
FK 1-17-69
JK 7/3/69

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓ REVISE DWG	RECORD EO	REWORK	✓ SCRAP

APPROVED BY		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	COST
DATE	7/8/69 JDT				7/1/69		7/10/69	7-26-69

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DRAWING	LEO-280	1488

7-15-69
ISSUED BY GEO. W. ROCKLEIN X86048 6/25/69 (ML) SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11213

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53159	LM-15(45)	1 EA
		LM-14(44)	1 EA
		LM-13(43)	1 EA
		LM-12(42)	1 EA
		LM-11(41)	1 EA
		LM-10(40)	1 EA
		LM-9(39)	1 EA
		LM-8(38)	1 EA
		LM-7(37)	1 EA
		LM-6(36)	1 EA
		LM-5(35)	1 EA
		LM-4(34)	1 EA
LM	LDW280-53159	LM-3(33)	1 EA
PART NO. LDW280-11213-11,-13,-15 -17 & -19		GAEC SCH NO. 30	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00						
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED

LAST DASH NO. USED -19

GRUMMAN REL INFO
PRIM NO. 715 | LE(001) MP-14 | 11-5-6 | EMF

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY SUPPA 11-3-66
LAYOUT BY PFORTSCH
CHECKED BY GB 11-4-66
GR LEADER 11/4
VEH DES INT J. Pusateri 11/4
STRUCTURES 11/5/66
STRUCTURES R.A. HILDEBRAND
WEIGHTS
THERMO V.J. 11/4
PROJ ENGR R.M. Carbee 11-5-66
REL GROUP 11/5/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ANGLE
ASCENT STAGE - MID SECT - LH
LOWER THERMAL SHIELD

SIZE B
CODE IDENT NO. 26512
LDW280-11213
SCALE NONE
SHEET 1.00 OF 3

ENG 77.1 12-65

CDR 11-15-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11213-19	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.032x2x6	T6	88	
		-17						.032x2x6			
		-15						.032x2x6			
		-13						.071x2x6			
		LDW280-11213-11	E	ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.025x2x6	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11213

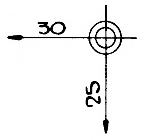
SCALE NONE

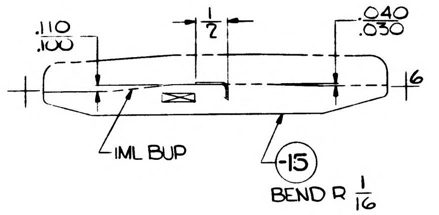
SHEET 200

ENG 77.2 7-65

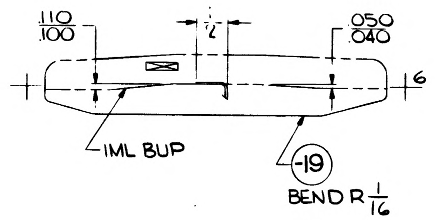
01

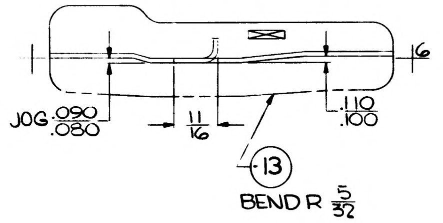
NAS 9-1100

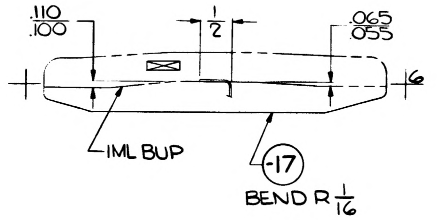


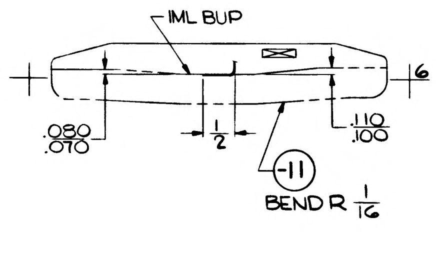

.110
.100
1/2
.040
.030
16
IML BUP
-15
BEND R 1/16

NOTE
1-NO TOOLING HOLES PERMITTED
IN PARTS.


.110
.100
1/2
.050
.040
16
IML BUP
-19
BEND R 1/16


16
JOG .090
.080
11/16
.110
.100
-13
BEND R 5/32


.110
.100
1/2
.065
.055
16
IML BUP
-17
BEND R 1/16


IML BUP
16
.080
.070
1/2
.110
.100
-11
BEND R 1/16

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

LDW280-11213

LDW280-11213

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
SIZE F	CODE IDENT NO. 26512	LDW280-11213	
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

ENG 73-5 6-64

FOR PHOTO REPRODUCTION

K2

01 NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 506
CONTROL INFO NO. LDW280A-57/8

TO THE FOLLOWING DWG'S LISTED BELOW. ADD PA-1(W5) EFFECT

DWG Nº	** DASH Nº	REQ'D/MOD	DWG TITLE	N/A	CHG Nº
LDW280-10987	-11	1	SEE DWG	LDW280-53159	B4
10989	-15, -17	1 EA			B4
10991	-27, -29, -30	1 EA			C5
10992	-21, -23	1 EA			C5
10994	-19	1			B5
10995	-11	1			B3
10996	-11	1			B5
11001	-11, -13	1 EA			B4
11002	-11 -13	7 1			B3
11003	-19, -21	3 EA			B4
11004	-11 -13 -15	4 6 2			B3
11005	-11 -17 -19	5 2 1			B3
11007	-11, -13	1 EA			B3
11012	-11	1			C3
11210	-11	1			A1
11211	-17	1			A2
11212	-13	1			A2
11213	-11, -13, -15, -17, -19	1 EA			A1
11214	-11, -13, -15	1 EA			A1
11215	-11, -13, -15	1 EA			A2
11216	-11, -15	1 EA			A2
11217	-11, -13, -15, -17, -19, -21	1 EA			A2
11218	-11, -13	1 EA			A2
11219	-13, -15, -17, -21 -19	1 EA 3			A2
11220	-11, -13, -15, -17, -25, -21	1 EA			A2
11221	-13	1			A3
11222	-11 -13	1 3			A2
11223	-11	1			A2
11224	-11, -13, -15 -17, -19	1 EA			A1
11225	-11, -13, -15	1 EA			A1
11226	-11, -13, -15 -19, -21 -17	1 EA 3			A1
11227	-11, -15	1 EA			A2
11228	-11 -15, -17, -19, -23	1 2 EA			A2
LDW280-11229	-15, -13	1 EA	SEE DWG	LDW280-53159	A2

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG	☐	LCR 19-1124	5

REASON FOR EO: UPDATE DWG REQ'TS FOR PA-1

DESCRIPTION OF EO: ADDED PA-1(W5) REQ'TS TO **

GAEC C EO RELEASE: 3/11/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		PA-1 (W5)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: REWORK SCRAP — NOT REQD

APPROVED BY			SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
DATE	3/7/67	3/7/67			3/1/67	3/9		3/8/67	3-11-67
5	VDI								

PRIORITY: C

DRAWING TITLE: NOTED ABOVE

DRAWING NO.: LEO 280

EO NO. 506

ISSUED BY M. SHAPIRO X1153 SECTION VDI GROUP NO. 35 PL 35

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280
EO NO. 1488
CONTROL INFO NO. LDW280B8212

FOR THE FOLLOWING DWGS (*) [redacted]

REMOVE [redacted] LM-15 (45): EFF.

DRAWING Nº (*)	** DASH Nº	[redacted]	TITLE	NEXT ASSEMBLY	CHANGE Nº
LDW280-11004 ✓	-11 13 15	[redacted]	SEE DWG	LDW 280-53159	B5
-11005 ✓	-11 17-19	[redacted]			B5
-11211 ✓	-21	[redacted]			B1
-11007 ✓	-11 13	[redacted]			B5
-10996 ✓	-11	[redacted]			C1
-11012 ✓	-11	[redacted]			C5
-11798 ✓	-11-13	[redacted]			B1
-11210 ✓	-13	[redacted]			B1
-11212 ✓	-15	[redacted]			B1
LDW280-11213 ✓	11-13-15-17-19	[redacted]	SEE DWG	LDW280-53159	A3

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD #3587 [redacted] PKG 13 FG. 9 & 10 (5)

REASON FOR EO
CONFIGURATION CHANGE TO LM-15

DESCRIPTION OF EO
** FOR [redacted] (*-[redacted]) REMOVED [redacted] LM-15 (45) EFF.

(P) GAEC EO RELEASE 7-17-69

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS									
✓			✓	APPROVED BY							
				DATE	7/8/69					7/10/69	7-26-69
REVISE DWG	RECORD EO	REWORK	SCRAP		VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DRAWING	LEO-280	1488

7-15-69
ISSUED BY GEO. W. ROCKLEIN X86048 6/25/69 (ML) SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01 NAS 9-1100

LDW280-11214

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53159	LM-15(45)	1EA
		LM-14(44)	1EA
		LM-13(43)	1EA
		LM-12(42)	1EA
		LM-11(41)	1EA
		LM-10(40)	1EA
		LM-9(39)	1EA
		LM-8(38)	1EA
		LM-7(37)	1EA
		LM-6(36)	1EA
		LM-5(35)	1EA
		LM-4(34)	1EA
LM	LDW280-53159	LM-3(33)	1EA
PART NO. LDW280-11214-11,-13 & -15		GAEC SCH NO. 30	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00		2.00	3.00						
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO			
		PRIM NO.	LE(001)		EHF
LAST DASH NO. USED	-15	215	MP-14	11-10-6	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM # 1
DOCUMENTATION TYPE II

DRAWN BY	SUPPA 11/7/66		
LAYOUT BY	PFORTSCH ✓	THERMO	B. [illegible] MT 11/8/66
CHECKED BY	G. GLASER 11-7-66		
GR LEADER	11/1		
VEH DES INT	J. Pusateri 11/8/66		
STRUCTURES	11/9	PROJ ENGR	11-10
STRUCTURES		REL GROUP	
WEIGHTS			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHANNEL
ASCENT STAGE ~ MID SECT. ~ LH
LOWER THERMAL SHIELD

SIZE	CODE IDENT NO.		
B	26512	LDW280-11214	
SCALE	NONE	SHEET 1.00 OF 3	

ENG 77.1 12-65

CDR 11-15-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11214-15	E	CHANNEL	AL ALLOY SH	QQ-A-250/12	7075	.050 X 3 x 8	T6	88	
		LDW280-11214-13	E	CHANNEL	AL ALLOY SH	QQ-A-250/12	7075	.050 X 4 x 16	T6	88	
		LDW280-11214-11	E	CHANNEL	AL ALLOY SH	QQ-A-250/12	7075	.071 x 4 X 23	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11214

SCALE NONE

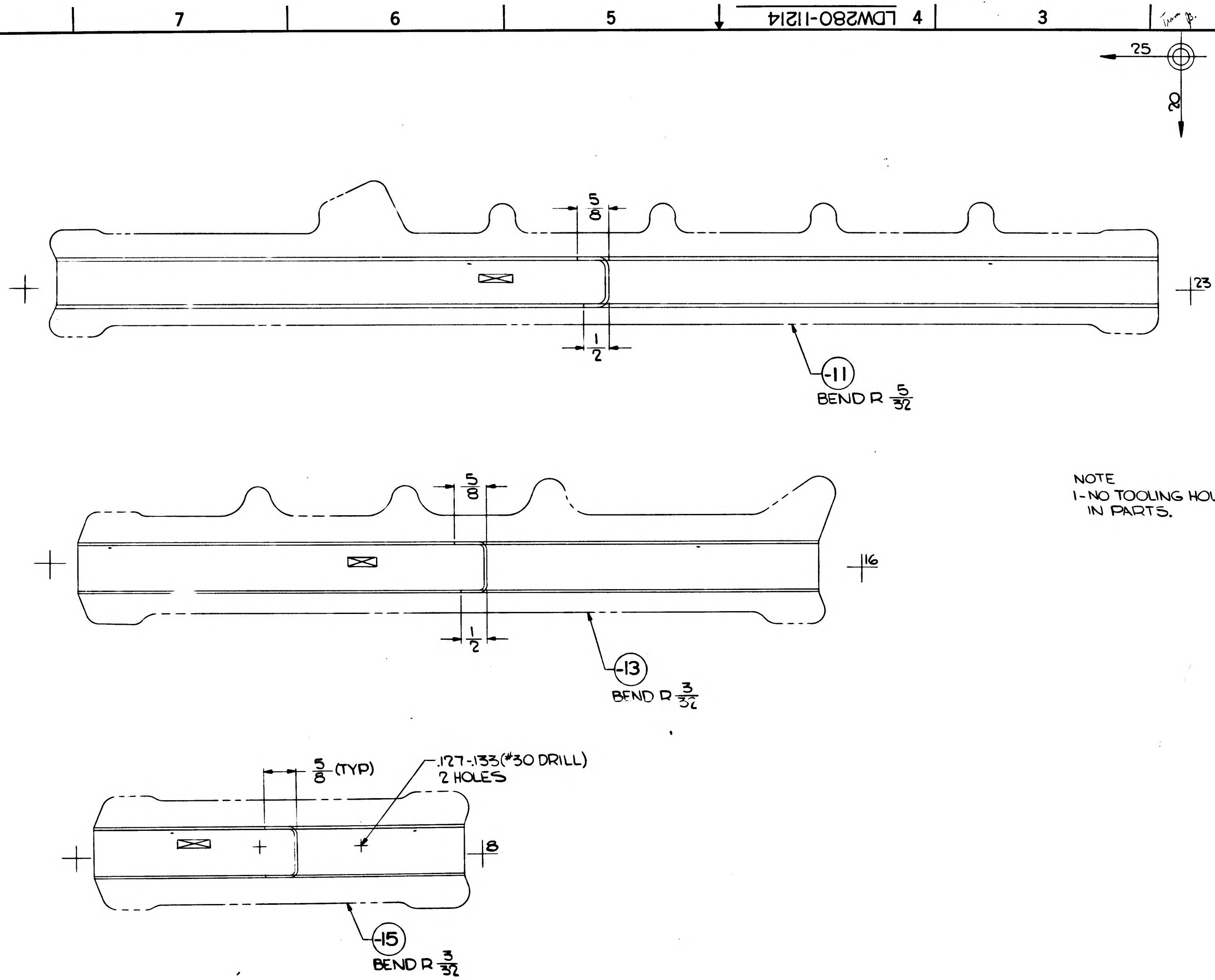
SHEET 200

ENG 77.2 7-65

01

NAS 9-1100

LDW280-11214



NOTE
1- NO TOOLING HOLES PERMITTED IN PARTS.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

~~RUBBER~~ STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

LM	SIZE D	CODE IDENT NO. 26512	LDW280-11214
MODEL OR END ITEM	SCALE FULL		SHEET 3 00

FOR PHOTO REPRODUCTION

K2

LDW280-11214

01

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE II NT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 506
CONTROL INFO NO. LDW280A-5718

TO THE FOLLOWING DWG'S LISTED BELOW. ADD PA-1(W5) EFFECT

DWG Nº	** DASH Nº	REQ'D/MOD	DWG TITLE	N/A	CHG Nº
LDW280-10987	-11	1	SEE DWG	LDW280-53159	B4
10989	-15, -17	1 EA			B4
10991	-27, -29, -30	1 EA			C5
10992	-21, -23	1 EA			C5
10994	-19	1			B5
10995	-11	1			B3
10996	-11	1			B5
11001	-11, -13	1 EA			B4
11002	-11 -13	7 1			B3
11003	-19, -21	3 EA			B4
11004	-11 -13 -15	4 6 2			B3
11005	-11 -17 -19	5 2 1			B3
11007	-11, -13	1 EA			B3
11012	-11	1			C3
11210	-11	1			A1
11211	-17	1			A2
11212	-13	1			A2
11213	-11, -13, -15, -17, -19	1 EA			A1
11214	-11, -13, -15	1 EA			A1
11215	-11, -13, -15	1 EA			A2
11216	-11, -15	1 EA			A2
11217	-11, -13, -15, -17, -19, -21	1 EA			A2
11218	-11, -13	1 EA			A2
11219	-13, -15, -17, -21 -19	1 EA 3			A2
11220	-11, -13, -15, -17, -25, -21	1 EA			A2
11221	-13	1			A3
11222	-11 -13	1 3			A2
11223	-11	1			A2
11224	-11, -13, -15, -17, -19	1 EA			A1
11225	-11, -13, -15	1 EA			A1
11226	-11, -13, -15, -19, -21 -17	1 EA 3			A1
11227	-11, -15	1 EA			A2
11228	-11 -15, -17, -19, -23	1 2 EA			A2
LDW280-11229	-15, -13	1 EA	SEE DWG	LDW280-53159	A2

DETAIL SPEC REQ	☐	CL II ENGRG CHG	✓	CL I ENGRG CHG	☐	LCR 19-1124	5

REASON FOR EO
UPDATE DWG REQ'TS FOR PA-1

DESCRIPTION OF EO
ADDED PA1(W5) REQ'TS
TO **

GAEC C EO RELEASE
JK 3/11/67

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		PA-1 (W5)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS	
✓ REVISE DWG	RECORD EO	NOT REQ'D REWORK	SCRAP

APPROVED BY		M. D.						AC
DATE	3/7/67	3/7/67		3/7/67	3/9		3/8/67	3-11-67
5	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY C
DRAWING TITLE NOTED ABOVE
DRAWING NO. LEO 280
EO NO. 506

ISSUED BY M. SHAPIRO X1153
SECTION VDI
GROUP NO. 335
PL 35

01

NAS 9-1100

DWG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LE0280
EO NO. 1483
CONTROL INFO NO. LDW280B8213

FOR THE FOLLOWING DWGS (*) [redacted])

REMOVE [redacted] LM-15 (45): EFF.

DRAWING Nº (*)	**DASH Nº [redacted]	[redacted]	TITLE	NEXT ASSEMBLY	CHANGE Nº
LDW280-11214	-11, -13, -15	[redacted]	SEE DWG	LDW 280-53159	A3
-11215	-11, -13-15	[redacted]			A4
-11216	-15, -11	[redacted]			A4
-11217	-11, -17, -19, -21, -23, -25	[redacted]			A5
-11218	-11-13	[redacted]			A4
-11219	-19, -13, -15, -17, -21	[redacted]			A4
-11220	-11-13, -15-17-21, -25	[redacted]			A4
-11799	-11, -13, -15, -17	[redacted]			A3
-11222	-11, -13	[redacted]			A4
LDW280-11223	-15	[redacted]	SEE DWG	LDW280-53159	B1

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD #3587 [redacted] PKG 13 Pg. 10 & 11 (5)

REASON FOR EO: CONFIGURATION CHANGE TO LM-15

DESCRIPTION OF EO: FOR [redacted] (*-**) [redacted] REMOVED FROM LM-15 (45) EFF.

GAEC EO RELEASE: NJB
7-17-69
JK 7/28/69

MODEL	EFFECTIVITY		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
✓			✓	DATE	7/8/69			7-8-69			7/10/69	7/25/69
REVISE DWG	RECORD EO	REWORK	SCRAP	VDI	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	EOU

PRIORITY: C
DRAWING TITLE: SEE DRAWING
DRAWING NO.: LEO-280
EO NO.: 1483

8/15/69
ISSUED BY GEO. W. ROCKLEIN X86048 6/25/69 (ML) SECTION VEN. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100

LDW280-11215

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53159	LM-15(45)	1 EA
		LM-14(44)	1 EA
		LM-13(43)	1 EA
		LM-12(42)	1 EA
		LM-11(41)	1 EA
		LM-10(40)	1 EA
		LM-9(39)	1 EA
		LM-8(38)	1 EA
		LM-7(37)	1 EA
		LM-6(36)	1 EA
		LM-5(35)	1 EA
		LM-4(34)	1 EA
LM	LDW280-53159	LM-3(33)	1 EA
PART NO. LDW280-11215-11,-13 & -15		GAEC SCH NO. 30	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED —

LAST DASH NO. USED -15

GRUMMAN REL INFO

PRIM NO. 233 | VE(001) MP 14 | 11-12-6 | EHF

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100

LINE ITEM # 1

DOCUMENTATION TYPE II

DRAWN BY	WICK 11-3-66	WEIGHTS	
LAYOUT BY	PFORTSCH ✓	RELIABILITY	
CHECKED BY	WG 11-10-66	THERMO	Jacobs 11/11
GR LEADER	11/11		
VEH DES INT	Pusateri 11/11/66		
STRUCTURE	11/12/66 for	PROJ ENGR	11-12
STRUCTURE	E.A. HILDERMAN	REL GROUP	11/12/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHANNEL -
ASCENT STAGE - MID SECTION
-Z31.00 - LWR THERMAL SHIELD

SIZE B | CODE IDENT NO. 26512 | LDW280-11215

SCALE NONE | SHEET 1.00 OF 3

CDR 11/15/66

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11215-15	E	CHANNEL	AL ALLOY SH	QQ-A-250/12	7075	.063 × 5 × 10	T6	88	7C
		LDW280-11215-13	E	CHANNEL	AL ALLOY SH	QQ-A-250/12	7075	.100 × 5 × 53	T6	88	6B
		LDW280-11215-11	E	CHANNEL	AL ALLOY SH	QQ-A-250/12	7075	050 × 5 × 14	T6	88	5C

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP-14-9030

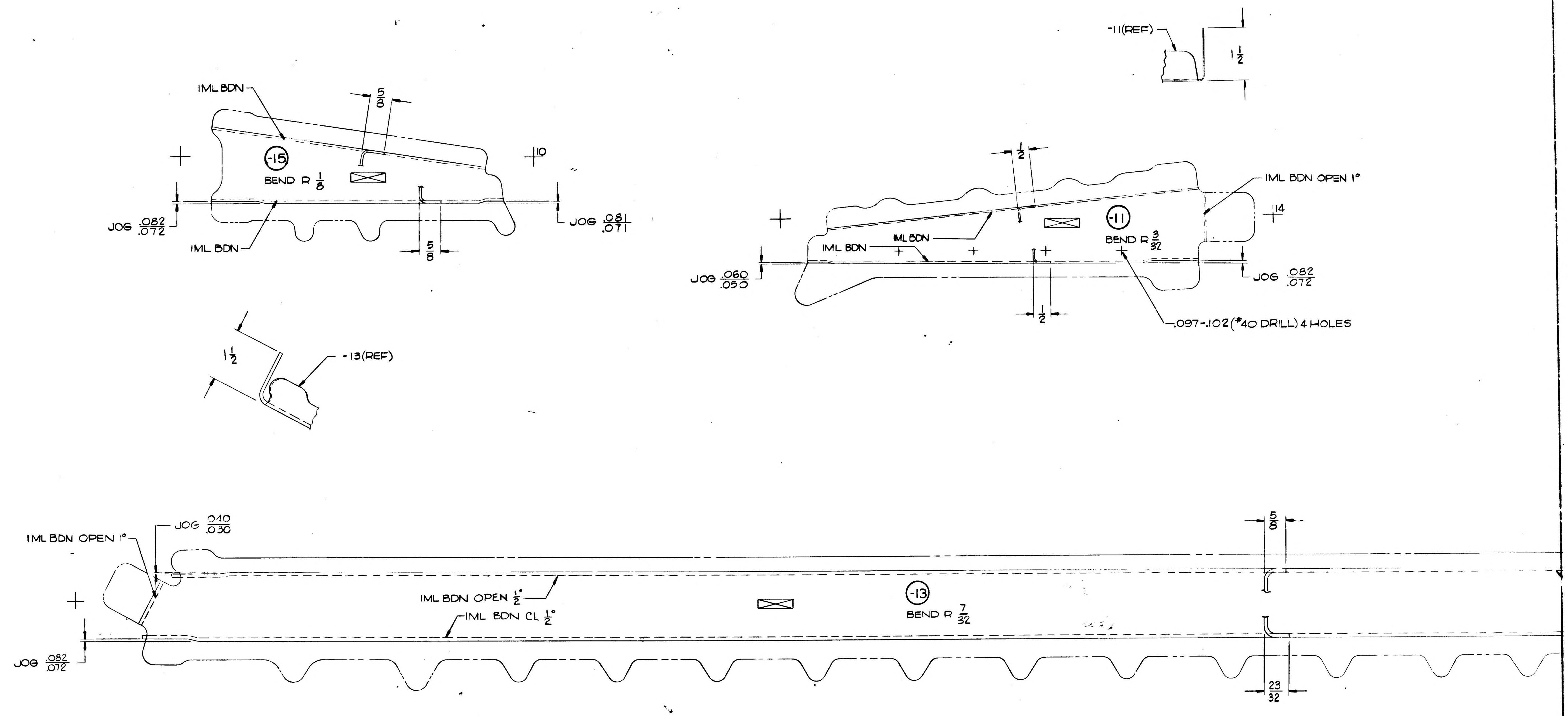
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE B
CODE IDENT NO. 26512
LDW280-11215
SCALE NONE
SHEET 2.00

ENG 77.2 7-65

01 NAS 9-1100



-11(REF)
1 1/2
IML BDN
5/8
-15
BEND R 1/8
JOG .082/.072
JOG .081/.071
IML BDN
5/8
10
1/2
IML BDN OPEN 1°
-11
14
BEND R 3/32
IML BDN
IML BDN
JOG .060/.050
JOG .082/.072
1/2
.097-.102(#40 DRILL) 4 HOLES
1 1/2
-13(REF)
IML BDN OPEN 1°
JOG .040/.030
5/8
IML BDN OPEN 1/2°
IML BDN CL 1/2°
-13
BEND R 7/32
JOG .082/.072
23/32

01/02

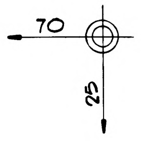
NAS 9-1100

CODE IDENT NO.26512

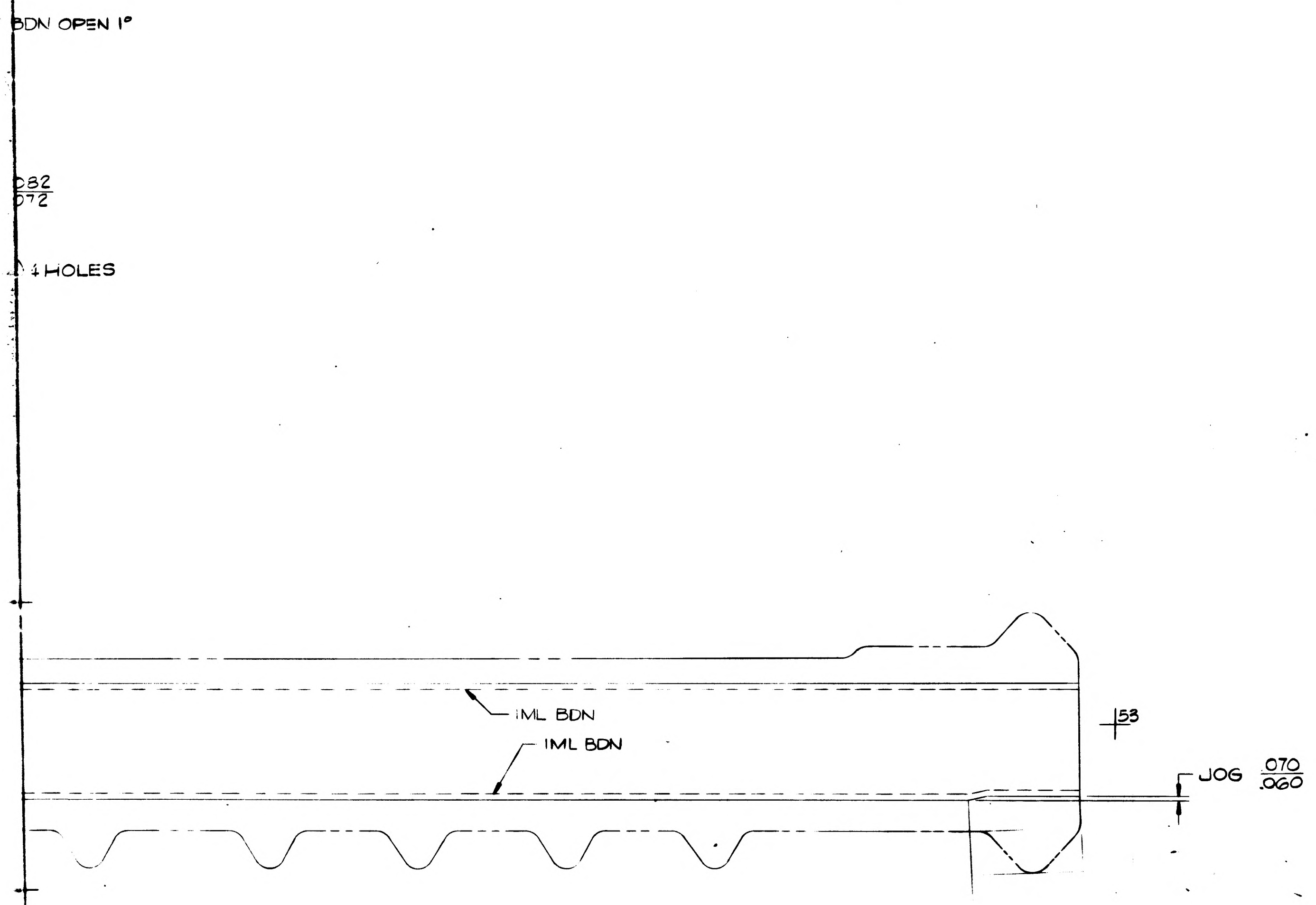
LDW280-11215

SH. 3

TR OK
W.M.



NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE 28x 88
PRINTING INFO ONLY
FULL SIZE SHEET AREA (30x 90) = 18.75 SQ. FT.
½ SIZE SHEET AREA (¼ OF FULL) = 4.687 SQ. FT.
PRINT TRIM LINE

LDW280-11215
LDW280-11215

02/02 NAS 9-1100

E IDENT NO. 26512
V280-11215 SH. 3

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK		
	SIZE H	CODE IDENT NO. 26512	LDW280-11215
LM MODEL OR END ITEM	SCALE FULL		SHEET 3.00

K3
K2

FOR PHOTO REPRODUCTION 2FR

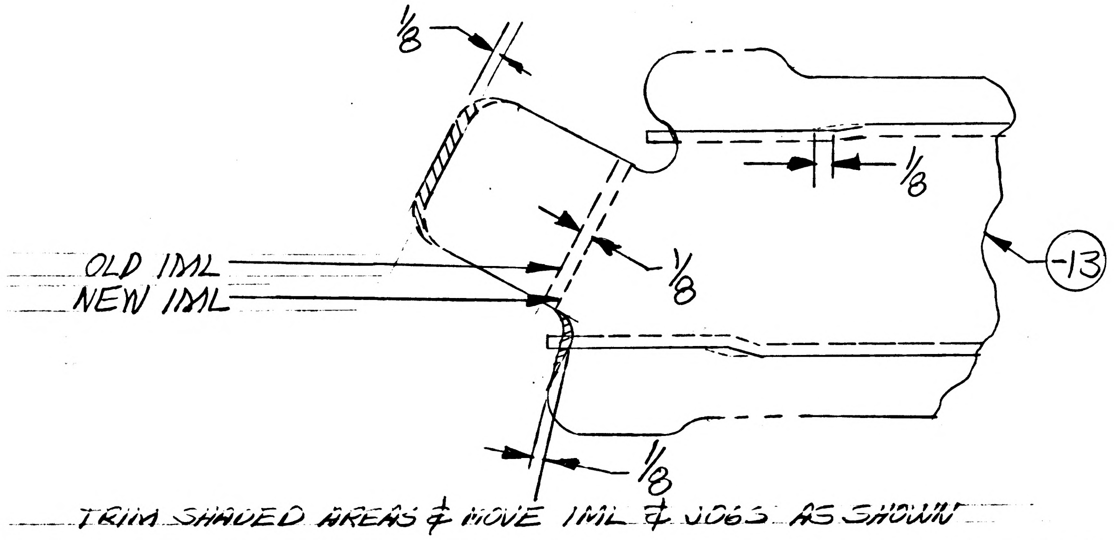
ENG 73-6 6-64

B

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW280-11215
EO NO. A1
CONTROL INFO NO. LM-3-4837



TRIM SHADED AREAS & MOVE IML & JOGS AS SHOWN

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☐	CL I ENGRG CHG	☐	3

REASON FOR EO: TO PROVIDE PROPER FIT ON NEXT ASSY.

DESCRIPTION OF EO: TRIMMED -13

GAEC EO RELEASE: C JK

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3(33)	THRU
		LM-15(45)	

	DRAWING CHANGE REQD		DISPOSITION OF PARTS										
APPROVED BY					JDR			—	BM				
DATE					4-11-67			—	3-6-67	3-6-67	3-9-67	3-7-67
	REVISE DWG	RECORD EO	REWORK	SCRAP	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
	✓		✓									

PRIORITY: C3
DRAWING TITLE: CHANNEL A/S ~ MID. SECT. - Z31 LWR. TH. SH.
DRAWING NO.: LDW280-11215
EO NO.: A1

ISSUED BY LIAISON ~ J. KOSLOSKI X2151 SECTION Y.D.I. GROUP NO. 335 PL 35

01

NAS 9-1100

01 NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 280
EO NO. 506
CONTROL INFO NO. LDW280A-5718

TO THE FOLLOWING DWG'S LISTED BELOW. ADD PA-1(W5) EFFECT

DWG Nº	** DASH Nº	REQ'D/MOD	DWG TITLE	N/A	CHG Nº
LDW280-10987	-11	1	SEE DWG	LDW280-53159	B4
10989	-15, -17	1EA			B4
10991	-27, -29, -30	1EA			C5
10992	-21, -23	1 EA			C5
10994	-19	1			B5
10995	-11	1			B3
10996	-11	1			B5
11001	-11, -13	1 EA			B4
11002	-11 -13	7 1			B3
11003	-19, -21	3EA			B4
11004	-11 -13 -15	4 6 2			B3
11005	-11 -17 -19	5 2 1			B3
11007	-11, -13	1EA			B3
11012	-11	1			C3
11210	-11	1			A1
11211	-17	1			A2
11212	-13	1			A2
11213	-11, -13, -15, -17, -19	1EA			A1
11214	-11, -13, -15	1 EA			A1
11215	-11, -13, -15	1EA			A2
11216	-11, -15	1EA			A2
11217	-11, -13, -15, -17, -19 -21	1EA			A2
11218	-11, -13	1EA			A2
11219	-13, -15, -17, -21 -19	1EA 3			A2
11220	-11, -13, -15, -17, -25, -21	1EA			A2
11221	-13	1			A3
11222	-11 -13	1 3			A2
11223	-11	1			A2
11224	-11, -13, -15 -17, -19	1EA			A1
11225	-11, -13, -15	1EA			A1
11226	-11, -13, -15 -19, -21 -17	1EA 3			A1
11227	-11, -15	1EA			A2
11228	-11 -15, -17, -19, -23	1 2 EA			A2
LDW280-11229	-15, -13	1 EA	SEE DWG	LDW280-53159	A2

DETAIL SPEC REQ ☐	CL II ENGRG CHG ☑	CL I ENGRG CHG ☐	LCR 19-1124			5

REASON FOR EO: UPDATE DWG REQ'TS FOR PA-1

DESCRIPTION OF EO: ADDED PA1(W5) REQ'TS TO **

GAEC C EO RELEASE: JK 3/11/67

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		PA-1 (W5)	

DRAWING CHANGE REQD: REVISE DWG ✓ · RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK · SCRAP)

APPROVED BY		M.D.						
DATE	3/7/67	3/7/67		3/1/67	3/9		3/8/67	3-11-67
5	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: C

DRAWING TITLE: NOTED ABOVE

DRAWING NO. LEO 280

EO NO. 506

ISSUED BY M. SHAPIRO X1153 SECTION VDI GROUP NO. 335 PL 35

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280 | EO NO. 1483
CONTROL INFO NO. LDW280B8213

FOR THE FOLLOWING DWGS (*) [redacted])

REMOVE [redacted] LM-15 (45): EFF.

DRAWING Nº (*)		**DASH Nº [redacted]	[redacted]	TITLE	NEXT ASSEMBLY	CHANGE Nº
LDW280 - 11214	✓	-11, -13, -15	[redacted]	SEE DWG	LDW280-53159	A3
-11215	✓	-11, -13-15	[redacted]			A4
-11216		-15, -11	[redacted]			A4
-11217		-11-17-19-21-23-25	[redacted]			A5
-11218		-11-13	[redacted]			A4
-11219		-19, -13-15-17-21	[redacted]			A4
-11220		-11-13-15-17-21-25	[redacted]			A4
-11799		-11-13-15-17	[redacted]			A3
-11222		-11, -13	[redacted]			A4
LDW280 - 11223		-15	[redacted]	SEE DWG	LDW280-53159	B1

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD # 3587 [redacted] PKG 13 PG. 10 & 11 (5)

REASON FOR EO
CONFIGURATION CHANGE TO LM-15

DESCRIPTION OF EO
FOR [redacted] (*-**) [redacted] REMOVED FROM LM-15 (45) EFF.

GAEC EO RELEASE NJB
7-17-69
JK 7/28/69

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			✓

			SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	BOX
APPROVED BY									
DATE		7/8/69			7-8-69			7/10/69	7/25/69
	VDI	VDI							

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DRAWING	LEO-280	1483

8/15/69
ISSUED BY GEO. W. ROCKLEIN X86048 4/25/69 (ML) SECTION VEH. DES. INT. GROUP NO. 335 PL 25

0 1

NAS 9-1100

LDW280-11216

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-53159	LM-15(45)	1 EA
LM		LM-14(44)	1 EA
LM		LM-13(43)	1 EA
LM		LM-12(42)	1 EA
LM		LM-11(41)	1 EA
LM		LM-10(40)	1 EA
LM		LM-9(39)	1 EA
LM		LM-8(38)	1 EA
LM		LM-7(37)	1 EA
LM		LM-6(36)	1 EA
LM		LM-5(35)	1 EA
LM		LM-4(34)	1 EA
LM	LDW280-53159	LM-3(33)	1 EA
PART NO. LDW280-11216-11, -13, -15 & -17		GAEC SCH NO. 30	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00	
REV					
SHEET					
REV					
SHEET					
REV					

LAST SECT LTR USED
LAST DASH NO. USED -17
GRUMMAN REL INFO
PRIM NO. 215 | IE(001) MP/LH 11-7-6 | EMF

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100
LINE ITEM #1
DOCUMENTATION TYPE II
DRAWN BY SUPPA 11/2/66
THERMO V. Navarro 11/4
LAYOUT BY PFORTSCH ✓
CHECKED BY D. FASS 11-3-66
GR LEADER 11/3
VEH DES INT G. Pusateri 11/3
STRUCTURES 11/5/66
STRUCTURES L.A. HILDERMAN
WEIGHTS
PROJ ENGR R.M. Carbee 11-7-66
REL GROUP 11/7/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ZEE
ASCENT STAGE ~ MID SECT ~ LH.
LOWER THERMAL SHIELD

SIZE B
CODE IDENT NO. 26512
LDW280-11216
SCALE NONE
SHEET 1.00 OF 3

CDR 11/15/66

ENG 77.1 12-65

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW280-11216-17	E	ZEE	AL ALLOY SH	QQ-A-250/12	7075	.063 x 4 x 17	T6	88	
		↑ -15	↑	↑	↑	↑	↑	.050 x 5 x 15	↑	↑	
		↓ -13	↓	↓	↓	↓	↓	.063 x 5 x 30	↓	↓	
		LDW280-11216-11	E	ZEE	AL ALLOY SH	QQ-A-250/12	7075	.071 x 4 x 35	T6	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						T6	AL HEAT TREAT	MIL-H-6088
						88	ANODIZE	LSP14.9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW280-11216

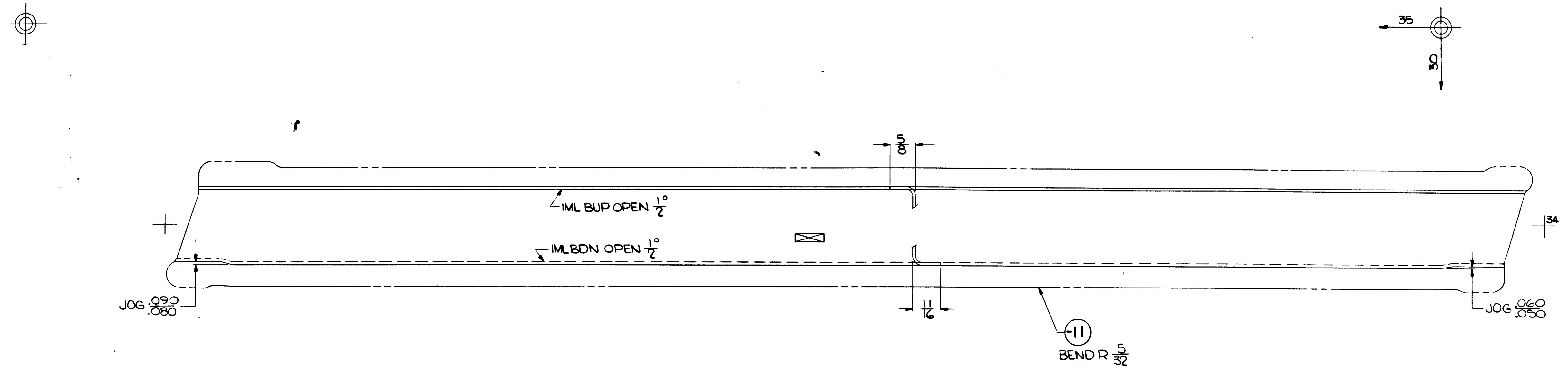
SCALE NONE

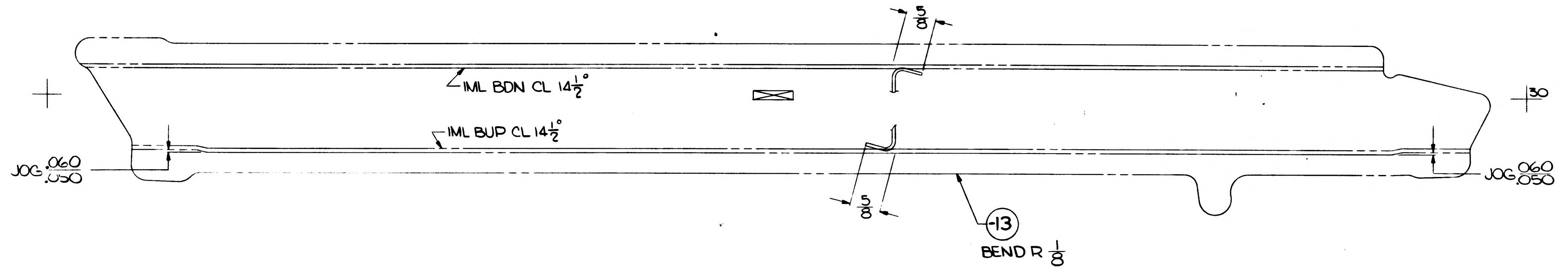
SHEET 2.00

ENG 77.2 7-65

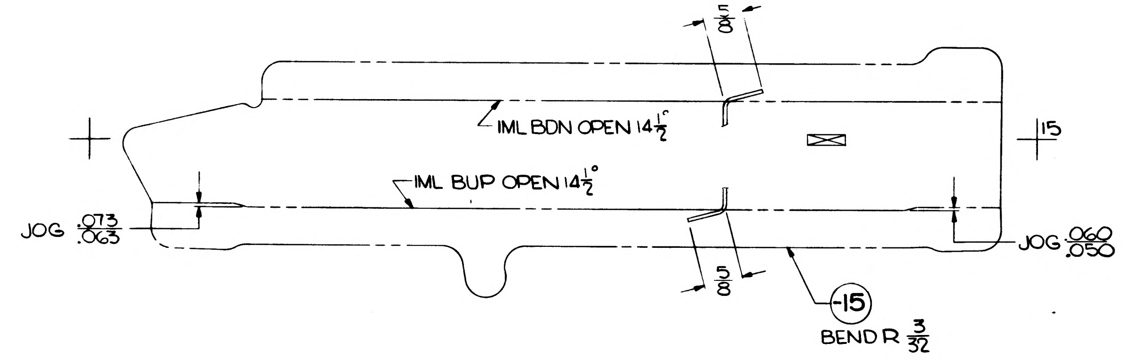
01

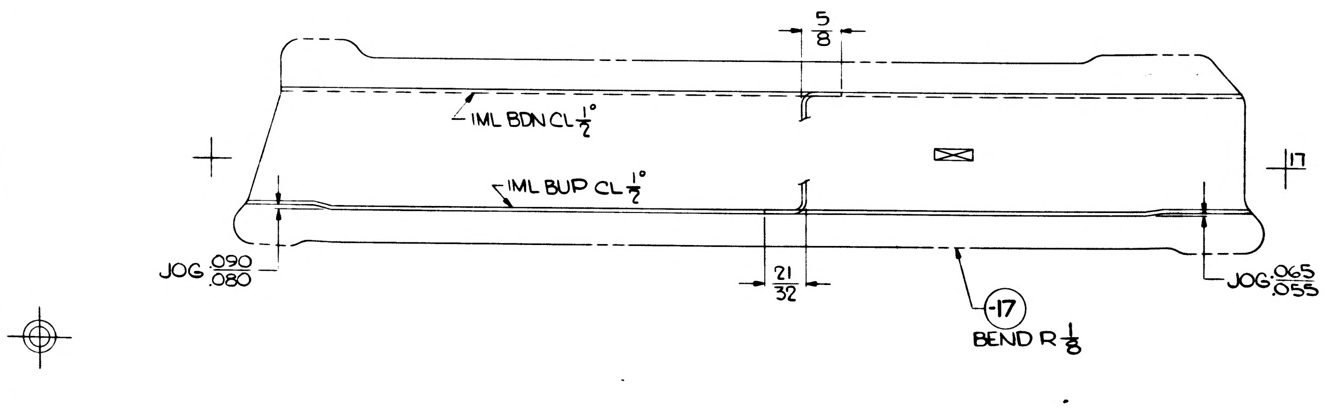
NAS 9-1100


35
30
5/8
IML BUP OPEN 1/2°
IML BDN OPEN 1/2°
34
JOG .090/.080
11/16
JOG .060/.050
-11
BEND R 5/32


5/8
IML BDN CL 14 1/2°
IML BUP CL 14 1/2°
30
JOG .060/.050
5/8
JOG .060/.050
-13
BEND R 1/8

NOTE
1- NO TOOLING HOLES PERMITTED IN PARTS.


5/8
IML BDN OPEN 14 1/2°
IML BUP OPEN 14 1/2°
15
JOG .073/.063
JOG .060/.050
5/8
-15
BEND R 3/32


5/8
IML BDN CL 1/2°
IML BUP CL 1/2°
17
JOG .090/.080
21/32
JOG .065/.055
-17
BEND R 1/8

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

01

NAS 9-1100

LDW280-11216

LDW280-11216

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LM	SIZE E	CODE IDENT NO. 26512	LDW280-11216	
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

FOR PHOTO REPRODUCTION

K2

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER EMF-A

DWG. NO. LDW280-11216
EO NO. A1
CONTROL INFO NO. LDW280A-4292

IN M/B B/M & F/D
REMOVE -13 & -17

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☑ CL I ENGRG CHG ☐

3

REASON FOR EO	DESCRIPTION OF EO	GAEC C EO RELEASE
FUEL LINE INTERFERENCE WITH LOWER SHIELD	DELETED -13 & -17	Ⓟ FR 12/16/6

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LM 3(33) THRU LM	15(45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			✓

APPROVED BY								
DATE	12/13/66			12/12	12/14		12-15-66	12-15-66
#1	VDI	~~SUPPORT~~	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~GOVT~~

PRIORITY: C

DRAWING TITLE: ZEE - ASCENT STAGE - MID SECT - L.H. LOWER THERMAL SHIELD

DRAWING NO.: LDW280-11216

EO NO.: A1

ISSUED BY H. FORSCH

SECTION VD1

GROUP NO. 335

PL 35

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ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LEO 280
EO NO. 506
CONTROL INFO NO. LDW280A-5713

TO THE FOLLOWING DWG'S LISTED BELOW. ADD PA-1(W5) EFFECT

DWG Nº	** DASH Nº	REQ'D/MOD	DWG TITLE	N/A	CHG Nº
LDW280-10987	-11	1	SEE DWG	LDW280-53159	B4
10989	-15, -17	1 EA			B4
10991	-27, -29, -30	1 EA			C5
10992	-21, -23	1 EA			C5
10994	-19	1			B5
10995	-11	1			B3
10996	-11	1			B5
11001	-11, -13	1 EA			B4
11002	-11 -13	7 1			B3
11003	-19, -21	3 EA			B4
11004	-11 -13 -15	4 6 2			B3
11005	-11 -17 -19	5 2 1			B3
11007	-11, -13	1 EA			B3
11012	-11	1			C3
11210	-11	1			A1
11211	-17	1			A2
11212	-13	1			A2
11213	-11, -13, -15, -17, -19	1 EA			A1
11214	-11, -13, -15	1 EA			A1
11215	-11, -13, -15	1 EA			A2
11216	-11, -15	1 EA			A2
11217	-11, -13, -15, -17, -19, -21	1 EA			A2
11218	-11, -13	1 EA			A2
11219	-13, -15, -17, -21 -19	1 EA 3			A2
11220	-11, -13, -15, -17, -25, -21	1 EA			A2
11221	-13	1			A3
11222	-11 -13	1 3			A2
11223	-11	1			A2
11224	-11, -13, -15 -17, -19	1 EA			A1
11225	-11, -13, -15	1 EA			A1
11226	-11, -13, -15 -19, -21 -17	1 EA 3			A1
11227	-11, -15	1 EA			A2
11228	-11 -15, -17, -19, -23	1 2 EA			A2
LDW280-11229	-15 -13	1 EA	SEE DWG	LDW280-53159	A2

DETAIL SPEC REQ	☐	CL II ENGRG CHG	☑	CL I ENGRG CHG ☐

LCR 19-1124 5

REASON FOR EO: UPDATE DWG REQ'TS FOR PA-1

DESCRIPTION OF EO: ADDED PA-1(W5) REQ'TS TO ** (9)

GAEC C EO RELEASE: 3/11/67

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO
LM		PA-1 (W5)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO

DISPOSITION OF PARTS: NOT REQ'D (REWORK / SCRAP)

APPROVED BY				RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
DATE	3/7/67	3/7/67			3/7/67	3/9		3/8/67	3-11-67
5	JD1	SUPPORT							

PRIORITY: C

DRAWING TITLE: NOTED ABOVE

DRAWING NO.: LEO 280

EO NO. 506

ISSUED BY M SHAPIRO X1153 SECTION JD1 GROUP NO. 335 PL 35

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NAS 9-1100

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NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280		EO NO. 875
CONTROL INFO NO. LEO280B-1137		

FOR THE FOLLOWING DWGS, FOR DASH No. NOTED ✱ ADD QUAL. TEST (70) EFF.

(✱ USE APPLICABLE DASH No. IN DESCRIPTION OF E.O.)

DRAWING No.	DASH No.✱	No. REQ'D	NEXT ASSEMBLY	CHG No.
LDW280P11582	-11	1	LDW280 - 28898	A4
P11581	-11	1	- 28898	A3
P11580	-11	1	- 28898	A8
M11201	-11	1	- 28898	A3
M11200	-11	1	-28898	A4
M11199	-11	1	-28898	A3
P11080	-33	1	-28867	B3
-11264	-11,-13,-21,-15 -35	1 1	53226 53231	AB
-11266	-13, -29	1 OF EACH	-53226	A5
-11276	-21 -15,-17,-19	1 OF EACH	-53231	A5
-11275	-31,-15,-17, -21,-23 -25,-27,-33 -13	1 OF EACH 2	-53231	B5
-11274	-13,-15,-17,-19,-21,-23,-25 -29,-31,-35,-41 -33,-37,-27 -39	1 EACH 3 EACH 4 EACH	-53231	A4
M11147	-7, -9,	1 EACH	-28866	C1
-11008	-15	1	-28326	B7
LDW280-11216	-15, -11	1 EACH	-53159	A3

DETAIL SPEC REQ ☐	CL II ENGRG CHG ☑	CL I ENGRG CHG ☐	LCD-2104	(5)

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
TEST REQUIREMENTS	FOR ✱ ADDED QUAL. TEST REQUIREMENTS	JK 2/19/68

MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	✓		NOT REQ'D		DATE	2/7/68			2/7/68	2/11/68		2/7/68	2-19-68
				REVISE DWG	RECORD EO	REWORK	SCRAP		VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
LM		QUAL TEST (70)		PRIORITY C		DRAWING TITLE NOTED ABOVE						DRAWING NO. LEO280				EO NO. 875

2/14
ISSUED BY CARLOS PAEZ X7033 SECTION V.D.I. GROUP NO. 335 PL 25

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO280
EO NO. 1483
CONTROL INFO NO. LDW280B8213

FOR THE FOLLOWING DWGS (*) [redacted])

REMOVE [redacted] LM-15 (45): EFF.

DRAWING № (*)	**DASH № [redacted]	[redacted]	TITLE	NEXT ASSEMBLY	CHANGE №
LDW280-11214 ✓	-11, -13, -15	[redacted]	SEE DWG	LDW 280-53159	A3
-11215 ✓	-11, -13-15	[redacted]			A4
-11216 ✓	-15, -11	[redacted]			A4
-11217	-11-17-19-21-23-25	[redacted]			A5
-11218	-11-13	[redacted]			A4
-11219	-19, -13-15-17-21	[redacted]			A4
-11220	-11-13-15-17-21-25	[redacted]			A4
-11799	-11-13-15-17	[redacted]			A3
-11222	-11, -13	[redacted]			A4
LDW280-11223	-15	[redacted]	SEE DWG	LDW280-53159	B1

DETAIL SPEC REQ ☐ CL II ENGRG CHG ☐ CL I ENGRG CHG ✓ LCD*3587 [redacted] PKG 13 Pg. 10 & 11 (5)

REASON FOR EO: CONFIGURATION CHANGE TO LM-15

DESCRIPTION OF EO: FOR [redacted] (*-**) [redacted] REMOVED FROM LM-15 (45) EFF.

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ RECORD EO ☐
DISPOSITION OF PARTS: REWORK ☐ SCRAP ✓

	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	BOYD
APPROVED BY								
DATE	7/8/69			7-9-69			7/10/69	7/25/69

GAEC EO RELEASE
7-17-69
7/28/69

PRIORITY: C
DRAWING TITLE: SEE DRAWING
DRAWING NO.: LEO-280
EO NO.: 1483

8/15/69
ISSUED BY Geo. W. Rockleín X86048 4/25/69 (ML) SECTION Ven. Des. Int. GROUP NO. 335 PL 25

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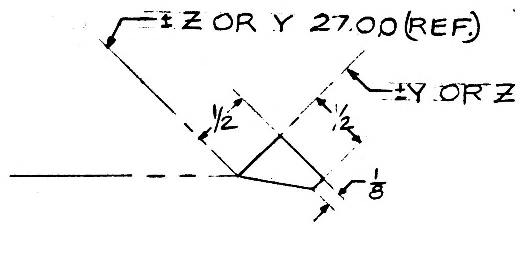
ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

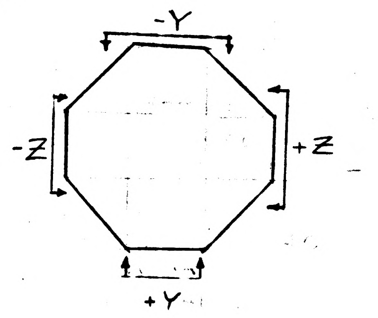
DWG. NO. LSK 280-10942 | EO NO. A1
CONTROL INFO NO. LSK 280A-0295

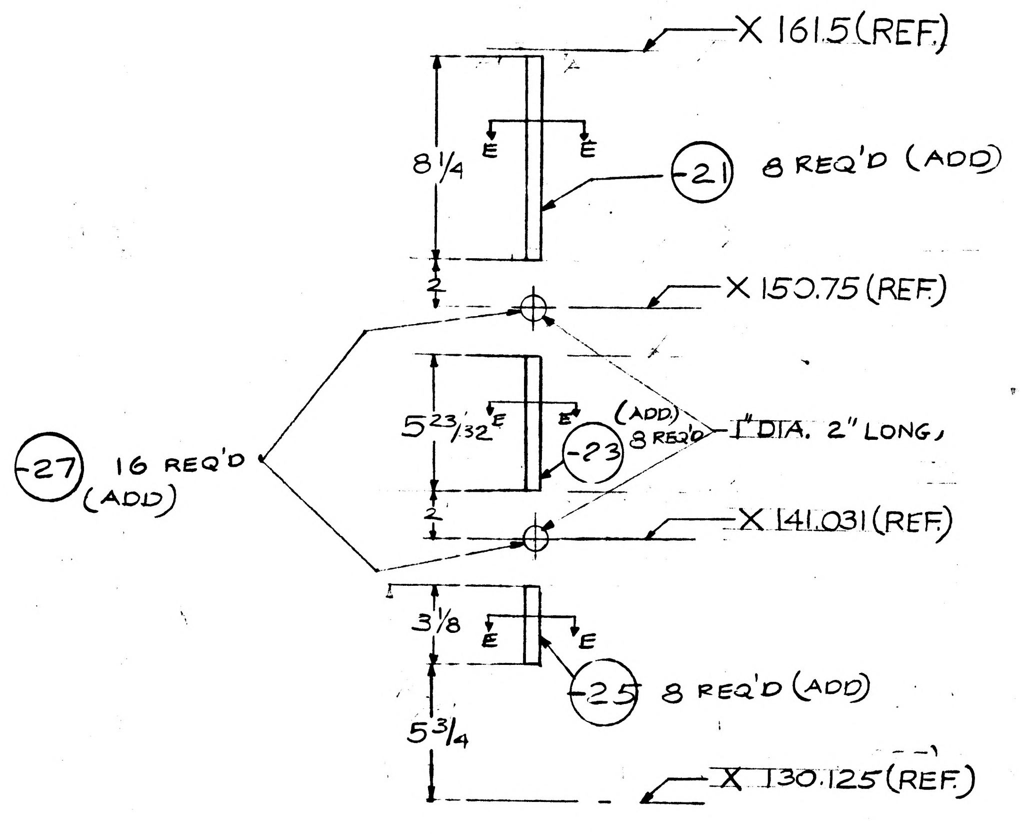
IN F/D REMOVE -3 THRU -19 & SECT. A-A, B-B, C-C & D-D. REVISE F/D AS SHOWN. IN M/B LSK 280-10942-1 WAS LSK 280-10942



±Z OR Y 27.00 (REF.)
±Y OR Z 81.875 (REF.)
1/2
1/2
1/8

SECTION E-E





X 161.5 (REF.)
8 1/4
E
E
-21
8 REQ'D (ADD)
2
X 150.75 (REF.)
5 23/32
E
E
(ADD)
-23
8 REQ'D
1" DIA. 2" LONG,
-27
16 REQ'D
(ADD)
2
X 141.031 (REF.)
3 1/8
E
E
-25
8 REQ'D (ADD)
5 3/4
X 130.125 (REF.)

LSK 280-10942-1 (ADD)

(5)

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	

REASON FOR EO	DESCRIPTION OF EO	GAEC C EO RELEASE
REDESIGN OF THERMAL SHIELD REQUIREMENTS IN LANDING GEAR AREA	REMOVED -3 THRU -19 & SECTION A-A, B-B, C-C & D-D ADDED -21, -23, -25, -27 & SECTION E E IN M/B LSK 280-10942-1 WAS LSK 280-10942	LE 9/12/6

MODEL	EFFECTIVITY PROCURING ACTIVITY NO.	EFFECTIVITY GAEC UNIT NO.	EFFECTIVITY SUB CONTR UNIT NO.
LEM		THERMAL SHIELD M/U	

DRAWING CHANGE REQD REVISE DWG	DRAWING CHANGE REQD RECORD EO	DISPOSITION OF PARTS REWORK	DISPOSITION OF PARTS SCRAP	APPROVED BY		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	CONT.
✓			✓	DATE 9/10/66	VDI	X	X	X	X	X	9/12	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	GEAR M/U - DESCENT STAGE THERMAL SHIELD M/U - LANDING	LSK 280-10942	A1

ISSUED BY I. STRAKOSCH/M. RANKEL SECTION VDI GROUP NO. 335 PL 35